



MRG&P Mississippi River

Geomorphology & Potamology Program

Change in Lower Mississippi River Secondary Channels: An Atlas of Bathymetric and Photographic Data

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Change in Lower Mississippi River Secondary Channels: An Atlas of Bathymetric and Photographic Data

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Abstract

Historically, the Lower Mississippi River (LMR) flowed over 1,130 miles and had access to a 30- to 124-mile wide floodplain. Over time, a multitude of engineering activities undertaken to create safer navigation and reduce flood damage shortened the Lower Mississippi River by 140 miles and greatly reduced the floodplain. These engineering activities also included closing dike construction in secondary channels to divert more water to the main channel during low river stages. However, the importance of secondary channels to the overall river ecosystem has led to the removal or notching of many closing dikes to restore flow and connection at low river stages. As part of this overall effort to conserve and restore the function and value of secondary channels, this study provides information on the existing and long-term (1960s-2000s) trends of the channels' areas and volume. To do this, bathymetric data and aerial photography were gathered from the New Orleans, Vicksburg, and Memphis Districts, U.S. Army Corps of Engineers. Secondary channels were located in the bathymetric files by looking for islands or bars with elevations > +5 ft Low Water Reference Plane. The secondary channels' boundaries were then digitized by drawing a polygon through the crest of the bar and extending it from the ends of the bar across the upriver and downriver mouths to the top bank. Along with river bed models created from the bathymetric data, these outlines were used to determine secondary channel area and volume for each decade (1960-2000). These data and aerial photographs of each channel for each decade are provided to aide in monitoring and restoration planning.

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Preface

The research documented in this report was conducted as part of the Mississippi River Geomorphology and Potamology (MRG&P) Program. The MRG&P is part of the Mississippi River and Tributaries (MR&T) Project and is managed by the U.S. Army Corps of Engineers (USACE) Mississippi Valley Division (MVD) and Districts. The MRG&P Program Manager was Freddie Pinkard and the Technical Director was Dr. Barbara Kleiss. The MVD Commander was MG Michael C. Wehr. The Acting Chief, MVD Programs Directorate, was Peter A. Taylor.

Mississippi River engineering direction and policy advice were provided by the Mississippi River Commission. The Commission members were MG Michael C. Wehr, USACE; the Honorable Sam E. Angel; the Honorable R. D. James; the Honorable Norma Jean Mattei, PhD; RDML Gerd F. Glang, National Oceanic and Atmospheric Administration; BG Margaret W. Burcham, USACE; and BG John S. Kem, USACE.

Research in support of the MRG&P was conducted by the U.S. Army Engineer Research and Development Center (ERDC) under the purview of the Environmental Laboratory (EL), Vicksburg, Mississippi. This report was prepared by Erin L. M. Guntren, Amanda J. M. Oliver, and Thomas M. Keevin, U.S. Army Engineer District, St. Louis; and Donald C. Williams, U.S. Army Engineer Division, Mississippi Valley. The report was prepared under the general supervision of Timothy Lewis, Chief, Aquatic Ecology and Invasive Species Branch, EL; Mark Farr, Chief, Ecosystem Evaluation and Engineering Division, EL; Dr. Jack Davis, Deputy Director, EL; and Dr. Beth Fleming, Director, EL.

This report is dedicated to the memory of Dr. Donald C. Williams. Dr. Williams was instrumental in the development of the design, data collection, and analysis during the early phases of this study (Williams and Clouse 2003). His friendly personality and ecological expertise are missed by his colleagues in the Mississippi Valley Division.

A project such as this does not come together without the help of an extensive team of people. The authors worked with individuals from every USACE district along the Mississippi River and the Mississippi Valley

Division to update this project, which was previously inactive for almost 10 years. This report would not have been possible without the help of the districts and Division and, for this, the authors are extremely grateful. In particular, thanks are extended to the following people for providing bathymetric data, gage data, maps, and historic aerial photography: Michael Watson (Memphis District); Jack Smith, Brian Everitt and the geospatial scanning team, Freddie Pinkard, and Janice Brown (Vicksburg District); and Eddie (Edwin) Betbeze, Ann Aucoin, and David Vossen (New Orleans District). The Environmental Office (New Orleans District) provided scanners and space to digitize MVN's historic river photographs. Jeffrey Banderet (St. Louis District) georeferenced photos. Tim Smith (U.S. Geological Survey) and John Wilson (Louisiana State University) helped locate additional historic photos. Chuck Gerdes, Michael Siadak, Michael Dougherty, and the geospatial office (Rock Island District) georeferenced large quantities of the historic photography. Paul Clouse (St. Louis District) helped locate the historic bathymetric data and helped the authors understand the methodology used in the original study. Kip Runyon (St. Paul District) provided technical reviews of the draft of this document. Jack Killgore (ERDC) provided technical reviews, shepherded the document through the publication process, and provided the cover photo. The authors would also like to thank Maryetta Smith, Paul J. DuBowy, and David Vigh, MVD, for their support and encouragement during this study.

COL Bryan S. Green was Commander of ERDC. Dr. Jeffery P. Holland was the Director of ERDC.

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Unit Conversion Factors

Multiply	Ву	To Obtain
International acres	0.4046856	hectares
cubic yards	0.7645549	cubic meters
feet	0.3048	meters
miles (nautical)	1,852.000	meters
miles (US statute)	1,609.347	meters

1 Introduction

The Lower Mississippi River (LMR) begins at the confluence of the Ohio River at Cairo, Illinois, and flows approximately 990 miles through its alluvial valley and deltaic plain to the Gulf of Mexico (Harmar and Clifford 2007) (Figure 1). The LMR is a dynamic system, changing in response to natural and manmade geomorphic features such as landforms, sediment loads, and stream velocities. The geomorphology of the LMR and its floodplain are significantly affected by geology, although the river flows on an alluvial surface. The local influences on the form of the LMR include bedrock of Tertiary age, gravel of Pleistocene age, clay plugs of Holocene age, and neotectonics (the Lake County Uplift near New Madrid, Missouri, and the Monroe Uplift south of Greenville, Mississippi) (Fisk 1944, Saucier 1991, Schumm et al. 1994). The large-scale engineering program conducted by the US Army Corps of Engineers to provide flood control and navigation improvements also affects the river's geomorphology.

In 1927, the Mississippi River flooded out of its bank, inundating hundreds of thousands of acres and causing over \$300 million in damages (Pearcy 2002). In response, Congress charged the U.S. Army Corps of Engineers (USACE or the Corps) with flood control and navigation channel maintenance of the LMR (DuBowy 2010). Congress authorized the Mississippi River and Tributaries (MR&T) project to fulfill this charge. The Mississippi River Commission (MRC) oversees implementation of the MR&T under the supervision of the Chief of Engineers. Since 1928, the nation has contributed \$14.5 billion toward the MR&T and has received an estimated \$348 billion return on that investment, including savings in transportation costs and flood damages (MRC 2013).

Engineering activities under the MR&T include construction of levees, bank revetments, training dikes, floodways, man-made cutoffs, dredging, channel alignment, and reservoirs on major tributaries (Smith and Winkley 1996, Harmar et al. 2005, Harmar and Clifford 2007). These and other activities have changed the LMR. Historically, the river inundated the entire 30- to 124-mile-wide floodplain during periods of high flows. Today, the levee system allows the river access to an approximately 5-mile-wide floodplain (Biedenharn et al. 2000). Additionally, the bankline stabilization program during the 1940s and 1950s artificially steepened the river.

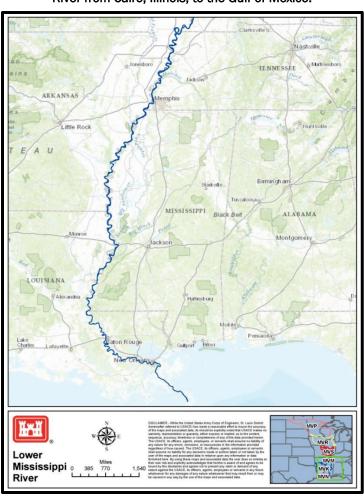


Figure 1. The study area encompasses the Lower Mississippi River from Cairo, Illinois, to the Gulf of Mexico.

This stabilization reduced or eliminated the ability of the river to migrate within the floodplain, reducing the potential for channel lengthening. Dike field construction and dredging have constrained pool-crossing and cross-sectional form adjustments (Harmar and Clifford 2007). Finally, the engineering activity with potentially the greatest significance was the manmade shortening of the LMR between 1932 and 1942 (Harmar and Clifford 2007). Fourteen of the most sinuous bends were cut off, which shortened the river by 143 miles between Memphis, Tennessee and Old River, Louisiana.

As the MR&T has progressed, the river's processes have changed. The periodicity of high and low flows in the LMR has changed. During a 20-year preregulation period (1910-1929), the LMR had a four-year cycle of two years higher stage and two years lower stage (Wasklewicz et al. 2005). Post regulation (1980-1989), the LMR has a more variable pattern from

one to four years between transitions (Wasklewicz et al. 2005). The river engineering program has also increased the LMR's gradient, average top-bank width, and channel depth. The highly trained LMR now responds to channel-forming flows by attempting to build mid-channel bars rather than meander cutoffs (Smith and Winkley 1996). All of these changes and many others affect the species that utilize the LMR.

Recognizing that changes in the LMR can impact species and that some of these changes can be reduced or reversed without impacting navigation, the Corp's Mississippi Valley Division (MVD) established the Lower Mississippi River Environmental Program. The Environmental Program was systemwide, consisting of environmental engineering and fish and wildlife resource studies on the LMR and its floodplain. The program's purpose was to improve the river's ecosystem while supporting the MR&T and its purpose to provide safe and efficient navigation. In the early 2000s, the program targeted secondary channels because closing dikes and sandbars prevented river flows from entering the channels. Altering these blockages to create diverse flow patterns would improve channel habitat diversity and provide aquatic species access to high quality habitat. With this in mind, restoration of secondary channels was selected as one of the top priorities by state agencies bordering the LMR (Boysen et al. 2012). To address this priority, MVD has established a partnership with the Lower Mississippi River Conservation Committee (LMRCC) and its collaborating agencies to collectively reach a common goal: to recognize the economic importance of the Mississippi River and restore aquatic habitats under a new program, the Mississippi River Geomorphology and Potamology Program (MRG&P).

Secondary channels were recognized as a top restoration priority for the LMR because they provide a variety of habitat types and are highly productive while being protected from commercial navigation traffic (Boysen et al. 2012). For example, multiple habitats, such as deep flowing channels, isolated pools (backwaters), and shallow riffles can exist within an individual secondary channel (Baker et al. 1991, Simons et al. 2001). Throughout a river system, secondary channels typically exhibit an array of habitat along a gradient between flowing to non-flowing, determined by their level of connectivity to the main channel. Based on the level of flow, secondary channels can function as wetlands, isolated backwaters, connected backwaters, isolated secondary channels (at low stages), and flowing secondary channels. Level of connectivity also affects substrates, water quality conditions (Crites et al. 2012), benthic invertebrate

communities (Bij de Vaate et al. 2007, Paillex et al. 2009) and fish faunas (Barko and Herzog 2003, Barko et al. 2004).

Flowing secondary channels, those connected to the main channel, generally have coarse bottom substrates (i.e., sand and gravel) and support a variety of lotic fish species (sturgeon, suckers, and minnows) tolerant of strong currents and/or turbidity. Disconnected secondary channels generally have finer substrate types (sand and silt) and support lentic species (sunfish, shad, and gar) that prefer moderate to low current and low turbidity levels (Barko and Herzog 2003). Aquatic species, including environmentally sensitive invertebrates, fish, and wildlife, use both types of secondary channel habitat for a variety of activities, including feeding, spawning, sheltering young, and overwintering (Eckblad et al. 1984, Scheaffer and Nickum 1986, Lowery et al. 1987, Siegrest and Cobb 1987, Grift et al. 2001, Barko and Herzog 2003). Secondary channels also export beneficial nutrients, detritus, plankton, invertebrates, and fish to the main channel and the Gulf of Mexico (Eckblad et al. 1984, Cellot 1996, Simons et al. 2001, Hein et al. 2004, Preiner et al. 2008) benefiting commercial and recreation fisheries.

The habitat in secondary channels is especially important because it provides a refuge for fish escaping navigation-related disturbances. Galat and Zweimuller (2001) and Wolter and Bischoff (2001) hypothesized that commercial navigation traffic may push fish toward the littoral zone or into secondary channels. Gutreuter et al. (2006) estimated the magnitude of traffic-induced reduction of fishes in the main channel of the Upper Mississippi River by comparing fish abundance in the navigation channel relative to abundance in secondary channels. They found that while the presence of some species was unaffected by traffic disturbances, the presence of others was reduced. Thus, secondary channels can be a refuge contributing to the overall health of the riverine system (Baker et al. 1991, Simons et al. 2001).

LMR secondary channels were also recognized as a priority because improving their habitat can be done relatively easily and affordably by altering the closing structures or sand bars that block flow. Closing structures are linear berms of rock constructed across the upstream — and sometimes downstream — end of secondary channels and connected backwaters. These structures reduce or eliminate flow in secondary channels and backwaters during low-to-moderate river stages to

concentrate flow in the navigation channel. In addition to closing structures, alluvial plugs, internal sandbars, and deposits that form below closing structures can reduce the connectivity of the secondary channel (Baker et al. 1987). Many resource managers believe that the diversity of connectivity between the main channel and secondary channels could be restored without impact to the MR&T Channel Improvement Program.

Furthermore, the value of secondary channels was highlighted in MVD's Conservation Plan (Section 7(a)(1) of the Endangered Species Act) on the three federally listed species in the LMR (pallid sturgeon, fat pocketbook mussel, and least tern) (Killgore et al. 2014). Within the Conservation Plan, the primary conservation measures included diversifying secondary channels by notching closing dikes and monitoring the geomorphology of the island complexes that form secondary channels (Killgore et al. 2014). Based on MVD's commitment to implementing the measures within the Conservation Plan, the USFWS issued a non-jeopardy Biological Opinion on the MR&T Channel Improvement Program in 2013 (USFWS 2013). This non-jeopardy opinion allows the MR&T to continue operation without modification. In the Biological Opinion, the USFWS designated a set number (baseline) of secondary channels that must be maintained within the LMR. A set number of secondary channels was designated by the USFWS as a surrogate for "take" of the three listed species because of the ecological value of secondary channels to the listed species (USFWS 2013). This report was used to establish this USFWS baseline number of secondary channels for the Biological Opinion.

This study was initiated in the 1990s by the late Dr. Donald Williams of MVD. The purposes of the study are to understand how secondary channel creation and persistence have changed over several decades and to identify affected channels that are candidates for ecosystem restoration (Williams and Clouse 2003). To conduct this study, bathymetric and photographic data of the LMR for each decade from the 1960s-2000s were gathered. In addition, the earliest available aerial photography for each secondary channel was obtained. These data sets and our results can be used in aquatic habitat rehabilitation planning in the LMR in conjunction with other available information (Killgore et al. 2012), and for compliance with the Biological Opinion for the MR&T.

Neither the original nor this study encompasses all secondary channels or backwaters of the LMR. Because secondary channel presence/absence and

area and volume are determined primarily by the availability of bathymetric survey data, both studies include only those channels that were surveyed. Also, the subset of secondary channels in both studies is not equally representative of all channel types. Because longer and shallower secondary channels are more likely to be too shallow or have blockages that restrict bathymetric survey boat access, it is likely that few channels of this type are included in this study. Therefore, the data used in this study are likely skewed toward those secondary channels that are deeper, shorter, or have a good connection to the main channel. Despite these complications, the authors believe that careful evaluation of these data, with consideration of the limitations above, can provide valuable insight on the past, present, and changing conditions of LMR secondary channels. Thus, the project has been extended, adding additional bathymetric data and aerial photographs. It is hoped that this information can lead to a better understanding of secondary channel conditions in the LMR.

2 Materials and Methods

For this study, secondary channels are areas in the LMR that transport less flow than the main channel and are divided from the main channel by either vegetated (usually higher elevation) or non-vegetated (usually lower elevation) bars or islands (bar will be used from this point on; there is no delineation between the two). Specifically, the definition of secondary channels developed by Cobb and Clark (1980) was used (i.e., secondary channels "occur where flow in the main channel zone is bifurcated by point bar or mid-channel bar bed forms with a crest elevation $\geq +5$ ft LWRP" (Low Water Reference Plane, where zero is defined as the river surface elevation that is exceeded 98% of the time)). The secondary channel's boundaries are "the crest of the bar that divides flow and an imaginary line extending from the ends of the bar across the upriver and downriver mouths of the (secondary) channel to the top bank" (Cobb and Clark 1980). Following this definition, a bar can be an area of sand with an elevation from +5 - +6 ft LWRP. Therefore, at stages > +6 ft LWRP, the bar would be under water and there would be no terrestrial division between the secondary channel and the main channel. Thus, secondary channel area and volume in this study are applicable to low-to-moderate river stages. For the definition and in all calculations, 1975 LWRP was used to standardize depth across the entire study area. Area and volume of each secondary channel were measured below flat water surfaces of -5 ft, o ft, +5 ft, and +10 ft LWRP.

To identify and calculate secondary channel area and volume, one bathymetric data set from each of five decades (1960s, 1970s, 1980s, 1990s, and 2000s) was gathered from the USACE New Orleans District (MVN), Vicksburg District (MVK), and Memphis District (MVM). Data were collected as part of the Mississippi River and Tributaries (MR&T) Project. Each data set included bathymetric transect data approximately 1,000 ft apart. Additionally, land surveyor transect data had been added to parts of some of the data sets (MVM 1970s, 1990s; MVK 1960s, 1970s; MVN 1960s, 1970s, 2000s). These transects generally stretched from levee to levee and occurred approximately every 5,000 ft. In most cases, the bathymetric data covered the Mississippi River main channel within the district; when the data did not reach the northern or southern extent of the district, "No Bath" was entered in data summary tables. Bathymetric data were collected at different water surface elevations. Therefore, the

maximum elevation and extent of coverage varied between and within (collected over several days or months) data sets. For example, bathymetric data from Vicksburg in 2004 were collected during low water. Very few secondary channels were surveyed because portions of the channel's bed were above water, preventing boat access. Therefore, secondary channels in this study represent those that the survey boat could access. Not all LMR secondary channels are included in this study for each decade, reflecting a lack of data, not a loss of the channel.

Prior to this project, the 1960s-1990s bathymetric data were acquired by scanning and georeferencing hard copy hydrographic survey maps and digitizing the map's bathymetric points. These data had been previously processed using Intergraph's MGE Terrain Analyst (Intergraph Corporation 1992). However, this software is no longer supported by Intergraph. Therefore, these files were converted from Intergraph's spatially explicit annotations to point shapefiles utilizing the ArcGIS "CAD to Feature Class" tool for use in ArcGIS 9.3 (Environmental Systems Research Institute (ESRI) 2008). The point shapefiles, and all other files, were projected from their original datums to horizontal datum NAD 27 UTM 15N. Elevation values in the bathymetric files were then converted to LWRP using a shapefile of the 1975 LWRP model. For the bathymetric data from the 2000s, the x, y, and z values were imported directly into ArcGIS from the survey boat files. Light Detection and Ranging (LiDAR) data were also available from the 2000s and were utilized for high bank elevations.

Secondary channels were identified by locating the bar that separated the secondary channel from the main channel, in accordance with the Cobb and Clark (1980) definition. Bars were identified by locating at least three adjacent bathymetric transects (approximately 3,000 ft) each containing adjacent point elevations \geq +5 ft LWRP (Figure 2). In most cases, the transects that delineated the bar also delineated the secondary channel. Once a bar was identified, an outline of the secondary channel was delineated in an ArcGIS polygon file. For the upper and lower ends of the outline, a line was drawn halfway between and parallel to the last transect of bathymetry for the bar and the subsequent transect with no bar (Figures 3(A and C)). The channel side bank was drawn by connecting the bar's highest elevation points (Figure 3(B)). For the landward bank, the outline was drawn through the first bathymetric point > +10 ft LWRP, the highest elevation used in calculations (Figure 3(D)). If either bar or landward bank elevations were < +10 ft LWRP, the outline was drawn just

beyond the last point in the transect. For the 2000s data, if the transect did not reach +10 ft LWRP on one or both banks, then the closest LiDAR point adjacent to the transect was added to the bathymetric data to provide the high bank.

Figure 2. Bathymetric data were color coded for secondary channel identification. Areas in green (+5 ft to +9.9 ft LWRP) and red (≥ +10 ft LWRP) represent areas with sufficient elevation to be a bar.

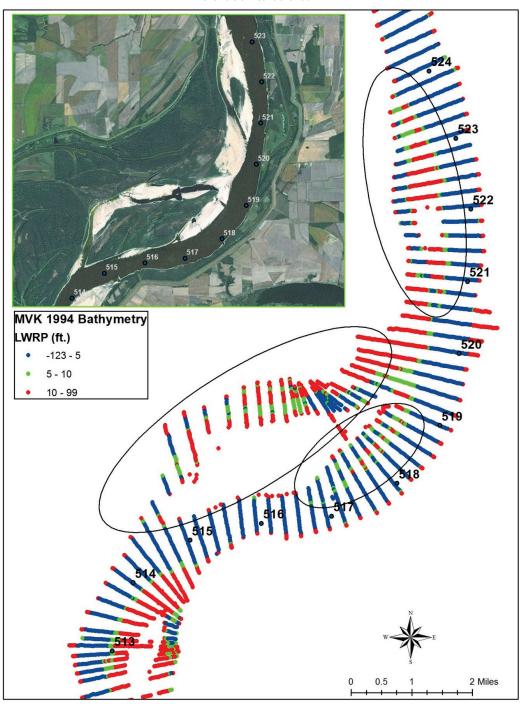
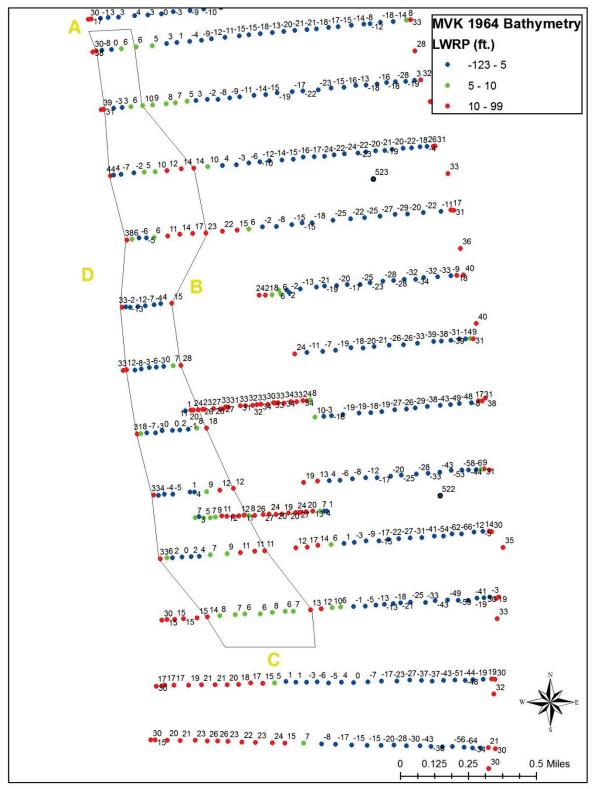


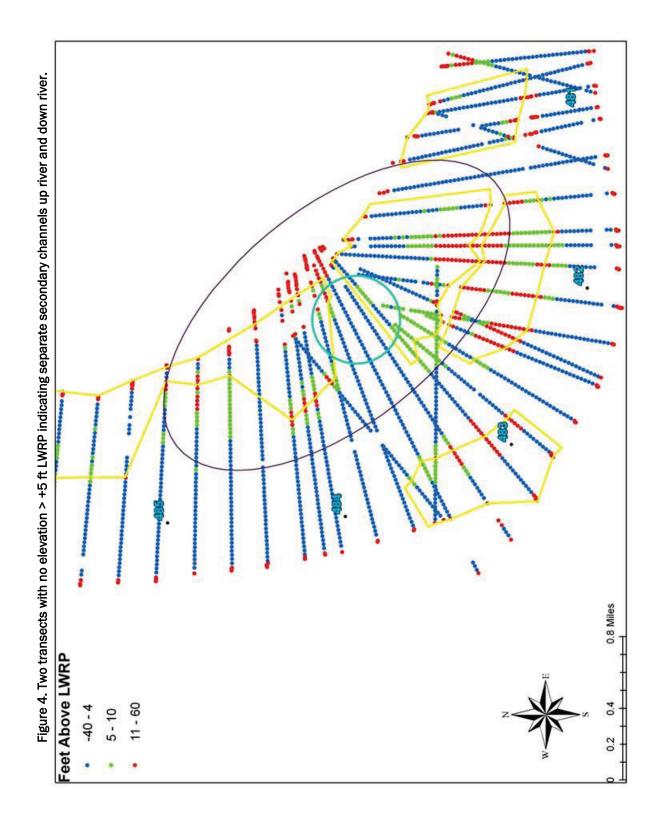
Figure 3. The 1964 outline for Chute Below Seven Oaks Dikes. A and C: The upper and lower ends of the outline drawn halfway past and perpendicular to the last transect of the bar. B: The channel side bank outline connects the bar's highest elevation points \geq +5 ft LWRP. D: The landward bank is drawn through the first point > +10 ft LWRP or just outside the last transect point if < +10 ft LWRP.

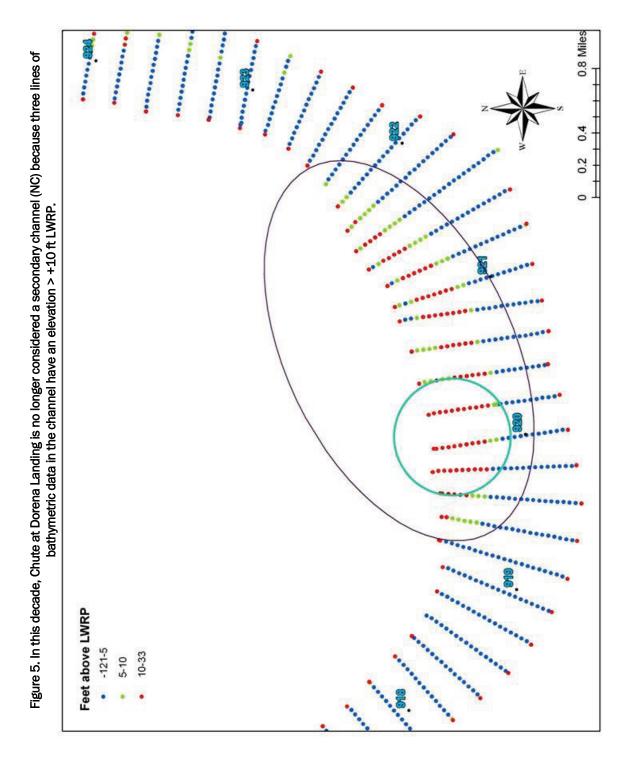


Multiple secondary channels can occur in close proximity. Secondary channels were considered discrete if their bars were separated by at least two transects with elevations < +5 ft LWRP (Figure 4). Secondary channels may not be present in previous or subsequent years. By definition, a secondary channel was no longer present when bathymetric data covered the area where the channel existed in prior or subsequent decades and (1) none of the bathymetric data exceeded +5 ft LWRP (bar eroded), or (2) a bar existed but at least two lines of data in the channel had no point lower than +10 ft LWRP (secondary channel filled in; Figure 5). It was determined that the secondary channel was filled in and no longer present at +10 ft LWRP, because the maximum water surface elevation for this study was +10 ft LWRP. However, the LMR exceeds +10 ft LWRP; thus, although considered not present in this study, these secondary channels continue to provide habitat benefits to LMR's aquatic community at higher stages.

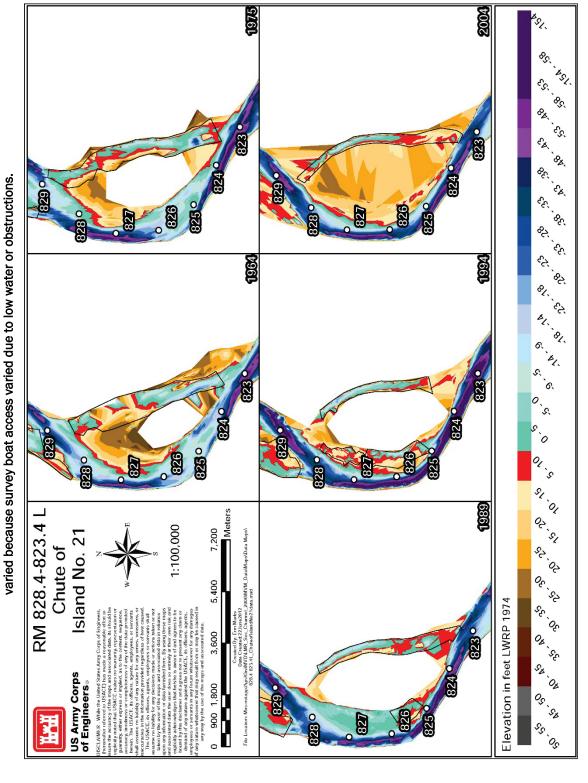
Bathymetric transects did not always occur every 1,000 ft within a secondary channel because low water or blockages prevented survey boat access. If transects were missing or did not reach +10 ft LWRP, then the data for that secondary channel were considered incomplete and a coverage percentage was visually estimated. For example, in Figure 6, the 1964 bathymetric data covered 90% of Chute of Island No. 21 while the 2004 data covered 100%. This reduction in coverage results in a lower area and volume for secondary channels with < 100% coverage compared to channels with 100% coverage. In other words, the area and volume for secondary channels with less than 100% coverage are less than the actual area and volume. Area and volume were not calculated for secondary channels with less than 80% coverage. In some cases, the entire area where the secondary channel existed previously or subsequently had no bathymetric data. Both cases were labeled as having insufficient data; therefore, area and volume were not calculated.

Once secondary channels were located and outlined, they were given descriptive names based on channel improvement master plans (similar to navigation charts). If secondary channels were associated with a dike field or named island or bar, the channel was named after those features: for example, Chute of Cottage Bend Dikes, Chute of Cottonwood Bar, or Chute of Island No. 21. Secondary channels not associated with dikes, islands, or bars were given names of significant features (Landings, Bends, Points, and Cutoffs). River miles for the upstream and downstream end of the most recent secondary channel outline, regardless of coverage, were also





bathymetric coverage varies between years: 90% in 1964, 100% in 75, 100% in 1989, 85% in 1994, and 100% in 2004. Coverage Figure 6. Triangular Irregular Network (TIN) models and outlines for Chute of Island No. 21. Outlines do not always match the TIN model because the TIN infers data where there are no bathymetric points; outlines are based on the bathymetric points. The



determined. The river miles for a secondary channel present in 1960, 1990, and 2000 were based on the outline from 2000 even if the outline only covered 90% of the channel in that year.

Secondary channel outlines and river bed models created from the bathymetry were used to calculate secondary channel area and volume. Each district's river bed model was generated from its bathymetric data using ArcGIS triangular irregular network (TIN) surface modeling. Models were created for each decade and Corps district, resulting in 15 models (Figure 6). ArcGIS TINs use Delaunay Triangulation, which linearly interpolates between each bathymetric point to create a continuous model of the river bed with each point as a vertex. Thus, TINs create a higher resolution surface than commonly used raster surface models because every location across the surface has a unique elevation value. To determine the secondary channel's area, contours were created for each decade at -5, o, +5, and +10 ft LWRP. The contours were then clipped to each outline (ESRI 2008). Contours and outlines were then combined and converted to polygons. Polygons were assigned elevation values (-5, 0, +5, +10 ft. and > +10ft.) where the area of all -5 ft. polygons represented the water surface elevation at -5 ft. LWRP. Volume was calculated using the "TIN polygon" Volume" ArcGIS tool. The tool calculates volume as the 3-D space between the user-designated water surface elevation and the TIN (river bed) constrained within the outline (ESRI 2008). Designated water surface elevations were -5, 0, +5, and +10 ft. LWRP. It is important to note the area and volume of the secondary channel at +10 ft. LWRP may be higher than reality. According to the Cobb and Clark (1980) definition, a secondary channel is separated from the main channel by +5 ft LWRP land. This land and thus, part of the outline, would disappear at water surface elevations > +5 ft LWRP. Because of the analysis method used in this study, the area and volume data do not capture the decrease in secondary channel area and volume as part of the bar becomes submerged.

In addition to the data collected, area and volume can be used to calculate mean depth, percent of area at specific water surface elevations, changes in depth and area between years, and cumulative changes (Table 1).

Table 1. Formulas for calculating additional secondary channel data.

Mean Depth	Percent of Area>5 at 0	Change in Area	Cumulative Change in Area	Change in Volume
<u>Volume</u> Area	<u>Area 5</u> (Area 0*100)	Area Y - Area Y+1	Area Y - Area Y _i	Vol. Y - Vol. Y+1
Cumulative	Change in Volume	Change in Mean Depth	epth Cumulative Change in Mean Depth	
Vol. Y - Vol. Y _i		Mean Depth Y - Mean Depth Y+1	Mean Depth Y - Mean Depth Yi	

Y - Year in study

Y+1 - Subsequent year in study

Y_i - Initial year in study

3 Data Limitations

There are limitations to the data utilized within this study. Consequently, conclusions should be drawn only after careful consideration of all data and aerial imagery for an individual secondary channel and nearby channels. Small changes in area and volume between decades may not indicate a true change in secondary channel condition. At least four factors can introduce variation into the area and volume between years:

- 1. Bathymetric data points are not equally spaced
- 2. Bathymetric transects are not in the same location from year to year
- Bathymetric data are not always collected at water surface elevations of > +10 ft LWRP, and
- 4. Bathymetric transects are perpendicular to the bank and may not follow the natural contours of the secondary channel.

Bathymetric transects are spaced approximately 1,000 ft apart. Modeling widely spaced transects tends to create a surface that is smoother than reality. Due to the wide spacing, small bars less than 3,000 ft long are not included in this study. Between bathymetric data sets, transects were never located in exactly the same location. This could cause one decade's transect to cross all high points along a dike and, in the next decade, cross all low points in the deep hole directly behind the dike. In this extreme example, the secondary channel would appear to have gained area and volume. Thus, small changes in area and volume between years could be due to variations in data collection rather than real secondary channel changes.

Parts of the bathymetric data were collected at water surface elevations below +10 ft LWRP. Thus, in the most extreme case, secondary channels surveyed when the water surface was +5 ft LWRP will have the same area at +10 ft LWRP because the survey and thus, the edge of the channel, stops at +5 ft LWRP. This is mitigated by measuring area and volume at different water surface elevations where lower elevations are surveyed and thus included in the river bed model. Therefore, lower water surface elevations have 100% coverage and higher water surface elevations may have less than 100% coverage. Additionally, when hydrographic surveys are conducted in

low water, fewer secondary channels are included in the bathymetric data. These conditions must be inferred from careful study of the data.

Perpendicular transect data complicate modeling because Delaunay triangulation connects each point to the next closest point (Figure 7). When there is a bend in a secondary channel, the last and highest point in one transect is not closest to the next transect's last and highest point. This creates a channel bed model with an undulating edge not present in the actual secondary channel bed (Figure 7). The undulating edge becomes more pronounced as the angle of the bend increases and is not present in straight channels. This introduces variation in the area and volume calculations where a curved secondary channel will have less area and volume than a straight channel with the same bathymetry. However, this variation is generally low.

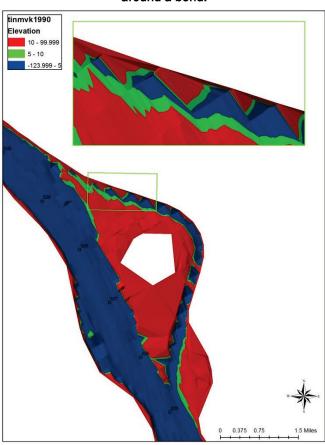


Figure 7. The undulating edge of the channel bed model created when transect bathymetric data are modeled around a bend.

All secondary channels included in this study have the problems identified above. Thus, the area and volume approximate reality. However, the area and volume trends within secondary channels and between years remain comparable. Future studies could improve these analyses by utilizing higher resolution bathymetric data, standard transect locations, high water surveys, and breaklines (a line that denotes change in slope; e.g., ridge or bank line). Higher resolution data would create a river bed model more likely to capture small-scale features like deep holes and dikes. Additionally, the bend variation would decrease because the distance between points would be less. Standard transect locations would standardize the inclusion of static features (dikes) in surveys. Breaklines would create a bank line for the TIN, which is another way to reduce the undulating edge in bends. Despite the limitations discussed above, these data, when evaluated carefully, can provide valuable insight on the past, present, and changing condition of secondary channels in the LMR.

4 Historic Aerial Photography

To improve the bathymetric analysis, the authors collected historic photography from the Memphis, Vicksburg, and New Orleans Districts, U.S. Army Corps of Engineers; the U.S. Geological Survey; imagery collections for various states; and the U.S. Department of Agriculture. The earliest available photography and photography for each decade (1960-2000) were gathered. These photographs were used to help determine the presence of multiple secondary channels and whether the absence of a channel was due to the channel filling in or insufficient data coverage (Figures 8 and 9). It was determined that a channel had filled in by studying photographs from the same decade with stages > +10 ft. LWRP. In these photographs, it was possible to see large areas of sand or vegetation filling in a secondary channel. Within each decade, photography was chosen for quality, low water conditions, and coverage. Memphis District photos were provided digitized and georeferenced. Hard copies of the New Orleans District photos were scanned on a flatbed scanner. The Vicksburg District scanned their negative film rolls. New Orleans District and Vicksburg District photos were georeferenced using ArcGIS by establishing 4-6 ground control points between the photo and reference photos from the National Agricultural Imagery Program and then using the "adjust transformation" feature to align the photo. For photographs, river stages were collected from Rivergages.com and U.S. Army Corps of Engineers records for all gages and dates from Cairo, Illinois, to New Orleans, Louisiana. The stage was determined for the photo date from the closest active gage.

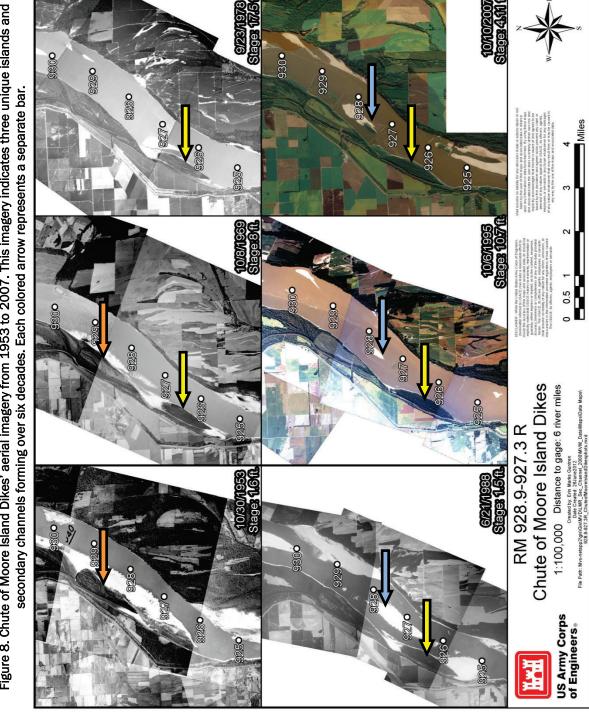
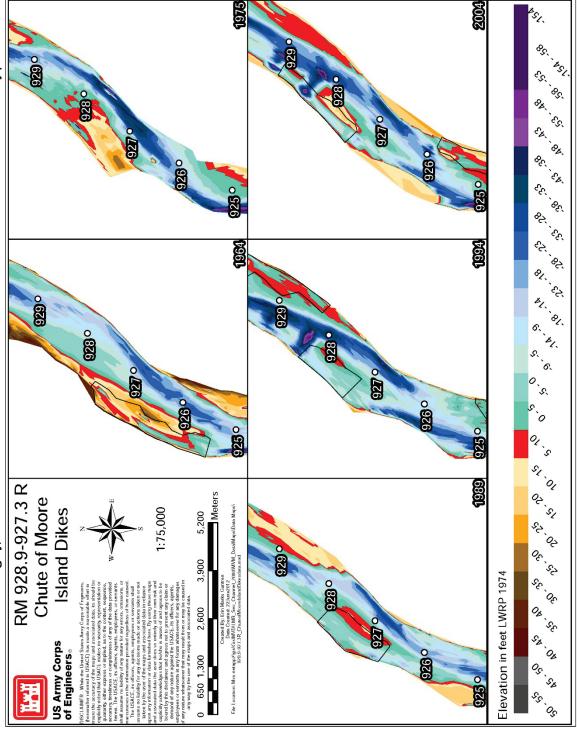


Figure 8. Chute of Moore Island Dikes' aerial imagery from 1953 to 2007. This imagery indicates three unique islands and

Figure 9. Chute of Moore Island Dikes channel bed models (TINs) created from bathymetric data for the same area as Figure 8. Without the aerial imagery, it is difficult to determine the number and status of bars in this area over the study period.



5 Reaches

To provide a better understanding of secondary channel habitat trends, the 948-river-mile study area was arbitrarily organized into 18 reaches, approximately 50 river miles each. The end points of each reach were placed at the boundaries of each Corps district and in areas of the river that did not contain a secondary channel in any decade. The data were organized into reaches because secondary channels were highly variable between decades. For example, between decades, two bars may merge or a long chain of bars may form below the bottom of a large vegetated bar – both resulting in increased area and volume. This variability makes it difficult to compare area and volume between decades or to determine the condition of any single secondary channel.

For the reach summaries, only secondary channels that were surveyed with >80% coverage for the 1960s, 1970s, 1990s, and 2000s were included. Because very few secondary channels were surveyed in the 1980s, the 1980s data were not used. The reach summary is the sum of these secondary channels' area and volume by reach and decade. For example, 14 secondary channels were identified in Reach A. However, only nine were surveyed in the four decades; thus, these nine secondary channels compose Reach A's summary. Reach summaries provide an indication of area and volume trends for a subset of secondary channels. The condition of all LMR secondary channels should not be inferred from the reach summaries. Secondary channels surveyed in four decades and included in the summary are likely those that are deeper, shorter, less sinuous, and faster flowing. Additionally, the reach summaries are an underestimate of the total area and volume of secondary channels because many channels were excluded due to lack of data. With these caveats in mind, the reach summaries provide information on the area and volume trends of a subset of secondary channels.

6 Discussion of Restoration Site Selection

The data presented in this report provide insight into secondary channel condition, abundance, and distribution. Secondary channel area and volume can be used to determine restoration sites, targeting those channels with the largest declining area and volume. Alternatively, the number of secondary channels within a reach may be used to determine restoration sites. Because of scarcity, restoration may focus on secondary channels within reaches that contain few channels. Reaches with few secondary channels may also be candidates for channel creation. By studying the placement of secondary channels identified in this report, planners can better understand where channels are likely to persist and can identify these areas for channel construction. Finally, secondary channels throughout a reach could be classified to determine the habitat types provided and then prioritized as in Killgore et al. (2012). Rare habitat types could be identified and secondary channel restoration undertaken to create more of those habitats. Because of the variety of restoration objectives and numerous interested parties, there is an opportunity for the MRG&P, the MR&T Project, and other interested organizations to work together to prioritize restoration sites for the benefit of all users. It is hoped that these data will aid in this restoration site planning and improve river management.

7 Methods and Benefits of Creating Secondary Channel Diversity

One simple and relatively inexpensive method to change the habitat within existing LMR secondary channels is to create notches of varying widths and depths in closing structures. Closing structures increase sedimentation and prevent lower water stages from entering secondary channels. Notches are made either by removing rock during maintenance work on an existing closing structure or by leaving an open, low section when a new structure is built. Traditionally, the typical notch has a 300 ft top width, sloping sides, a 100 ft bottom width, and a bottom elevation between 0 and +15 ft LWRP or roughly 15-to-30 ft below the structure's top. However, with recent advancements in hydrologic models, an array of notch sizes and bottom elevations can be modeled. Adjusting notch size and elevation would create channels with different current velocities, topography/bathymetry, and substrate composition, thereby increasing aquatic habitat and aquatic species diversity (Amoros 2001, Paillex et al. 2009). Additionally, notching closing structures has the potential to provide flows during low-flow periods, which can alleviate poor water quality conditions in shallow channels (Crites et al. 2012). Modeling can also be used to ensure adequate main channel flow so that navigation traffic is unaffected.

New secondary channels can be created by notching dikes. Similar to notching closing structures, a notch (or series of notches) is created near the bank in a dike or dike field. With a notch, river flows are split between the notch and the main channel. The water that flows through the notch creates a secondary channel with the dike and any sediment below it becoming the bar. Since the late 1970s, dike notches have been used by the St. Louis District, U.S. Army Corps of Engineers, in the Middle Mississippi River to create secondary channels (Strauser 1993). Because of the vastly greater water volumes and high current velocities in the LMR, there originally was reluctance to notch LMR dikes. The concern was that a dike could fail at the notch and create serious navigation safety problems. However, after the first few notches were created, it was found that the dikes remained structurally sound. Of the 774 dikes in the LMR as of 2012, 225 have been notched in the Vicksburg and Memphis Districts (Killgore et al. 2014) (the number of secondary channels and ecosystem rehabilitation opportunities decrease in the New Orleans District).

The literature provides evidence that different flows into secondary channels (various levels of connectivity) can affect water quality and aquatic communities. Crites et al. (2012) found that water quality conditions (measured from mid-June through March) in a shallow secondary channel isolated from the Mississippi River channel did not support healthy native fish communities. They suggested that creating some connectivity would change water quality conditions and benefit river fishes. Barko and Herzog (2003) found that secondary channels connected to the main channel supported large river species, tolerant of current and/or turbidity. Less connected secondary channels supported lentic species that prefer moderate to low current and low turbidity levels. Therefore, the research supports the need to provide a spectrum of connectivity levels between the main channel and secondary channels to benefit the greatest number of species.

8 Conclusions

Reestablishing a diversity of secondary channel connectivity is not only a priority for the LMR, it has become a central theme in riverine restoration and rehabilitation planning (i.e., Barneveld et al. 1994, Schropp 1995, Schropp and Baker 1998, Amoros 2001, Simons et al. 2001). Secondary channel reconnection can create a diversity of protected habitats that will be used by and will benefit species throughout the entire river and into the Gulf of Mexico. Secondary channel restoration can also be done at relatively low cost and can be planned to minimize impacts to other users. Because of the changes that have occurred in the LMR, including loss of hydrologic connectivity to the floodplain, maintaining and creating habitat diversity within existing LMR aquatic areas is paramount to ensuring the health and diversity of the multitude of species that utilize the LMR. In other words, secondary channels have been shown to provide extremely important aquatic habitat, and their restoration would offset some of the habitat losses that have occurred in the LMR. It is our hope that this report will aide river engineers, planners, and biologists in maintaining and creating a diversity of secondary channel habitat in the LMR.

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Appendices: Atlas of Data with Bathymetric and Photographic Maps

The data and maps on the following pages are arranged according to reach, beginning at the northern extent of the study area (Cairo, IL RM 948) and proceeding south. Within each reach, there is a table with the names of all secondary channels, a second table summarizing the reach's secondary channel area and volume by decade, a third table with the area and volume for each secondary channel and decade, and a reach map followed by data and photographic maps for each secondary channel. The table below summarizes the data for each reach, providing the number of secondary channels in each reach summary (only those channels with data in the 1960s, 1970s, 1990s, and 2000s), the total number of secondary channels found in the bathymetric data, and the total secondary channels within each district.

Table A. The river miles for the arbitrary LMR reaches, the total number of secondary channels within the reach, the number of channels in the reach summary, and the total number of channels by district.

	Reach	River Miles	Total Number of Secondary Channels	Number of Reach Summary Secondary Channels	Total Secondary Channels
	Α	948-898	14	9	
	В	898-848	14	8	
.sic	С	848-796.5	17	10	
Memphis	D	796.5-750	15	10	
Me	Е	750-691	17	11	
	F	691-658	9	7	
	G	658-596	14	7	100
	Н	596-552	9	1	
20	I	552-494	18	2	
Vicksburg	J	494-444	18	8	
	K	444-395	14	8	
	L	395-345	14	0	
	М	345-324	3	1	76
SI	N	324-275	8	8	
New Orleans	0	275-224	7	7	
ō	Р	224-174	5	5	

	Reach	River Miles	Total Number of Secondary Channels	Number of Reach Summary Secondary Channels	Total Secondary Channels			
	Q	174-124	1	0				
	R	124-74	1	0				
	S 74-24		0	0				
	T	24-0	0	0	22			
TOTAI	TOTAL SECONDARY CHANNELS WITHIN THIS STUDY							

Appendix A: Reach A – River Miles 948-898 Memphis District

Fourteen secondary channels were identified in Reach A (see below). Only nine secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table A1. Secondary channels and their upstream river mile for Reach A; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute of Island No. 1 Dikes	948.1L	Chute at Hickman Bend	921.7L	Chute 3 of Donaldson Point Dikes	902.2R
Chute of Pritchard Dikes	944.2R	Chute at Dorena Landing	921.5R	Chute of Below Island No. 9 Dikes	901.5L
Chute of Islands 2,3,& 4	941.0L	Chute of Island No. 8	915.0R		
Chute of Wolf's Island Bar	935.0L	Chute of Island No. 9	909.8L		
Chute of Moore Island Dikes	928.9R	Chute 1 of Donaldson Point Dikes	906.0R		
Chute at Beckwith Bend	925.9L	Chute 2 of Donaldson Point Dikes	903.6R		

Reach Summary

Table A2. Sum of Reach A area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yds ³)		
Decades		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	1,960	2,570	3,120	3,720	56,189,000	106,843,000
1975	100%	1,910	2,500	3,090	3,640	49,131,000	98,977,000
1994	100%	1,990	2,600	3,490	4,440	50,954,000	107,805,000
2004	100%	1,530	2,140	2,740	3,480	34,275,000	79,063,000

Table A3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach A. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

	River Miles	Year	Cvrg.		Area (Volume (yd³)			
Secondary Channel				-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Island No. 1 Dikes	948.1-944.4L	1964	100%	0	0	0	0	0	0
Chute of Island No. 1 Dikes	948.1-944.4L	1975	100%	80	250	470	550	1,642,000	8,669,000
Chute of Island No. 1 Dikes	948.1-944.4L	1989	100%	20	90	310	630	508,000	5,771,000
Chute of Island No. 1 Dikes	948.1-944.4L	1994	100%	110	200	430	620	2,102,000	8,935,000
Chute of Island No. 1 Dikes	948.1-944.4L	2004	0%	no bath	no bath	no bath	no bath	no bath	no bath
Chute of Pritchard Dikes	944.2-942.9R	1964	100%	0	20	70	140	79,000	1,253,000
Chute of Pritchard Dikes	944.2-942.9R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Pritchard Dikes	944.2-942.9R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Pritchard Dikes	944.2-942.9R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Pritchard Dikes	944.2-942.9R	2004	0%	no bath	no bath	no bath	no bath	no bath	no bath
Chute of Islands 2,3,& 4	941-939.5L	1964	100%	0	0	0	0	0	0
Chute of Islands 2,3,& 4	941-939.5L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Islands 2,3,& 4	941-939.5L	1989	100%	0	30	110	230	101,000	1,939,000
Chute of Islands 2,3,& 4	941-939.5L	1994	100%	10	50	160	190	280,000	2,544,000
Chute of Islands 2,3,& 4	941-939.5L	2004	100%	0	20	110	200	33,000	1,736,000
Chute of Wolf's Island Bar	935-930.4L	1964	100%	570	870	1,030	1,160	14,193,000	30,827,000
Chute of Wolf's Island Bar	935-930.4L	1975	100%	710	910	1,020	1,110	15,945,000	32,380,000
Chute of Wolf's Island Bar	935-930.4L	1989	100%	700	1,000	1,210	1,380	13,793,000	33,141,000
Chute of Wolf's Island Bar	935-930.4L	1994	100%	1,000	1,220	1,500	1,850	23,977,000	48,622,000
Chute of Wolf's Island Bar	935-930.4L	2004	100%	640	970	1,160	1,280	13,073,000	31,606,000
Chute of Moore Island Dikes	928.9-927.3R	1964	99%	10	40	120	210	165,000	2,067,000
Chute of Moore Island Dikes	928.9-927.3R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Moore Island Dikes	928.9-927.3R	1989	100%	60	180	250	330	1,385,000	5,425,000
Chute of Moore Island Dikes	928.9-927.3R	1994	100%	100	190	230	250	2,091,000	5,731,000
Chute of Moore Island Dikes	928.9-927.3R	2004	100%	110	160	190	220	2,824,000	5,842,000
Chute at Beckwith Bend	925.9-923.1L	1964	100%	0	0	0	0	0	0
Chute at Beckwith Bend	925.9-923.1L	1975	100%	0	0	0	0	0	0
Chute at Beckwith Bend	925.9-923.1L	1989	100%	0	0	0	0	0	0
Chute at Beckwith Bend	925.9-923.1L	1994	100%	0	0	80	170	2,000	1,369,000
Chute at Beckwith Bend	925.9-923.1L	2004	100%	0	30	140	420	80,000	2,856,000
Chute at Hickman Bend	921.7-920.7L	1964	99%	160	170	190	200	6,379,000	9,410,000
Chute at Hickman Bend	921.7-920.7L	1975	100%	0	0	0	0	0	0
Chute at Hickman Bend	921.7-920.7L	1989	100%	0	0	0	0	0	0
Chute at Hickman Bend	921.7-920.7L	1994	100%	0	0	0	0	0	0
Chute at Hickman Bend	921.7-920.7L	2004	100%	0	0	0	0	0	0

0	River Miles	Year	Cvrg.		Area (Volume (yd³)			
Secondary Channel				-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at Dorena Landing	921.5-919R	1964	100%	0	0	0	0	0	0
Chute at Dorena Landing	921.5-919R	1975	100%	0	10	90	230	6,000	1,721,000
Chute at Dorena Landing	921.5-919R	1989	100%	0	0	60	210	5,000	1,277,000
Chute at Dorena Landing	921.5-919R	1994	100%	0	20	80	180	75,000	1,532,000
Chute at Dorena Landing	921.5-919R	2004	100%	0	0	0	0	0	0
Chute of Island No. 8	915-910.8R	1964	100%	1,190	1,440	1,690	2,040	34,911,000	62,522,000
Chute of Island No. 8	915-910.8R	1975	100%	1,090	1,320	1,570	1,810	31,096,000	56,384,000
Chute of Island No. 8	915-910.8R	1989	100%	910	1,120	1,380	1,710	22,720,000	45,276,000
Chute of Island No. 8	915-910.8R	1994	98%	910	1,150	1,490	1,790	25,142,000	49,138,000
Chute of Island No. 8	915-910.8R	2004	100%	890	1,120	1,370	1,610	21,051,000	43,077,000
Chute of Island No. 9	909.8-909.2L	1964	100%	40	70	160	220	575,000	3,012,000
Chute of Island No. 9	909.8-909.2L	1975	100%	0	0	0	0	0	0
Chute of Island No. 9	909.8-909.2L	1989	100%	0	0	20	80	22,000	575,000
Chute of Island No. 9	909.8-909.2L	1994	100%	0	0	20	50	0	460,000
Chute of Island No. 9	909.8-909.2L	2004	100%	0	0	10	60	0	271,000
Chute 1 of Donaldson Point Dikes	906-905.4R	1964	100%	0	0	0	0	0	0
Chute 1 of Donaldson Point Dikes	906-905.4R	1975	99%	10	20	90	120	116,000	1,382,000
Chute 1 of Donaldson Point Dikes	906-905.4R	1989	99%	0	10	50	70	89,000	874,000
Chute 1 of Donaldson Point Dikes	906-905.4R	1994	100%	0	0	0	0	0	0
Chute 1 of Donaldson Point Dikes	906-905.4R	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Donaldson Point Dikes	903.6-902.8R	1964	100%	0	20	50	110	131,000	1,073,000
Chute 2 of Donaldson Point Dikes	903.6-902.8R	1975	100%	0	0	0	0	0	0
Chute 2 of Donaldson Point Dikes	903.6-902.8R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Donaldson Point Dikes	903.6-902.8R	1994	100%	10	30	50	70	153,000	947,000
Chute 2 of Donaldson Point Dikes	903.6-902.8R	2004	100%	0	10	30	50	43,000	553,000
Chute 3 of Donaldson Point Dikes	902.2-901.5R	1964	100%	0	0	0	0	0	0
Chute 3 of Donaldson Point Dikes	902.2-901.5R	1975	100%	0	0	0	0	0	0
Chute 3 of Donaldson Point Dikes	902.2-901.5R	1989	100%	0	0	0	0	0	0
Chute 3 of Donaldson Point Dikes	902.2-901.5R	1994	100%	0	0	0	0	0	0
Chute 3 of Donaldson Point Dikes	902.2-901.5R	2004	99%	0	10	40	60	28,000	699,000
Chute of Below Island No. 9 Dikes	901.5-899.2L	1964	100%	0	0	0	0	0	0
Chute of Below Island No. 9 Dikes	901.5-899.2L	1975	100%	100	250	410	500	2,084,000	8,492,000
Chute of Below Island No. 9 Dikes	901.5-899.2L	1989	100%	100	210	410	560	1,825,000	8,368,000
Chute of Below Island No. 9 Dikes	901.5-899.2L	1994	100%	80	180	260	320	1,605,000	5,738,000
Chute of Below Island No. 9 Dikes	901.5-899.2L	2004	100%	0	0	0	0	0	0

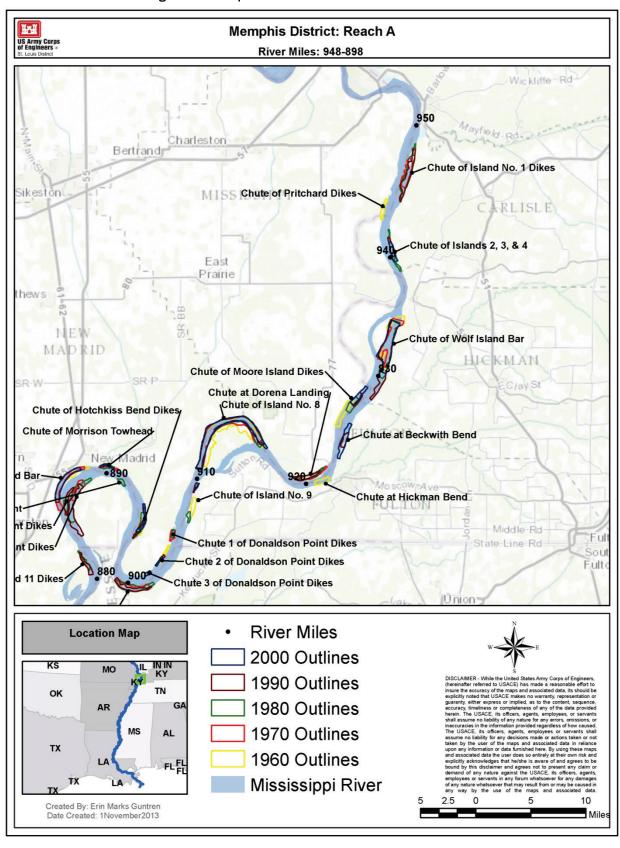
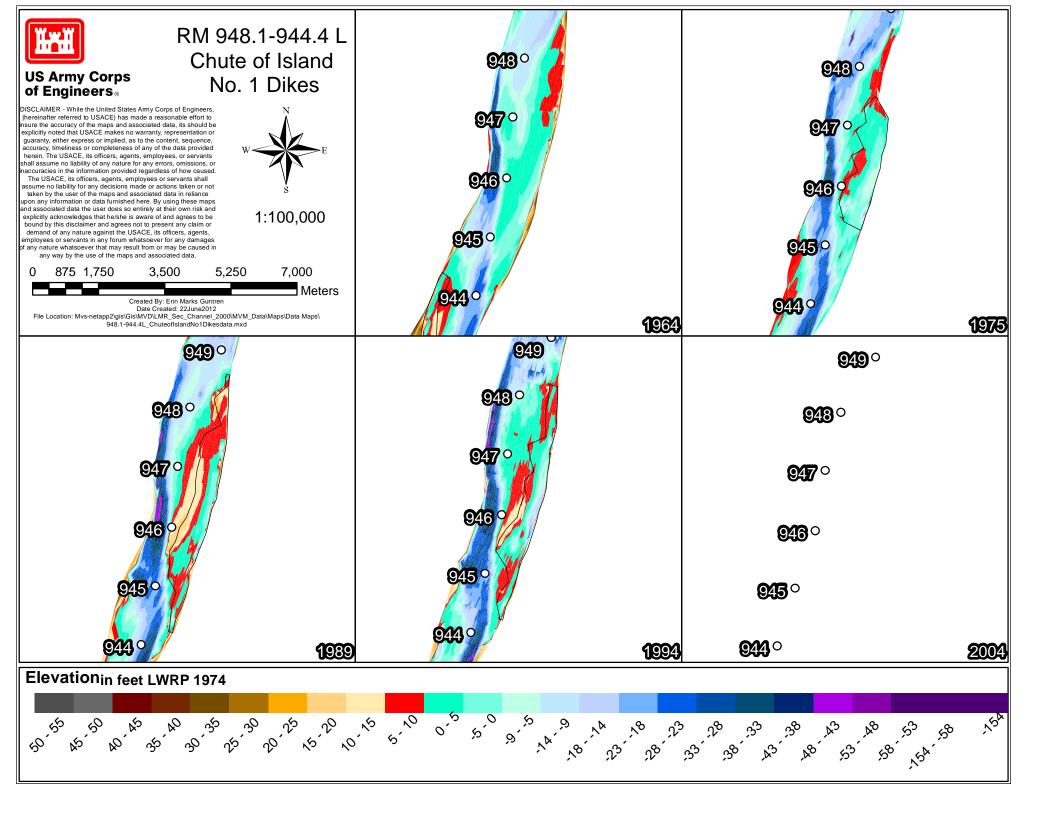
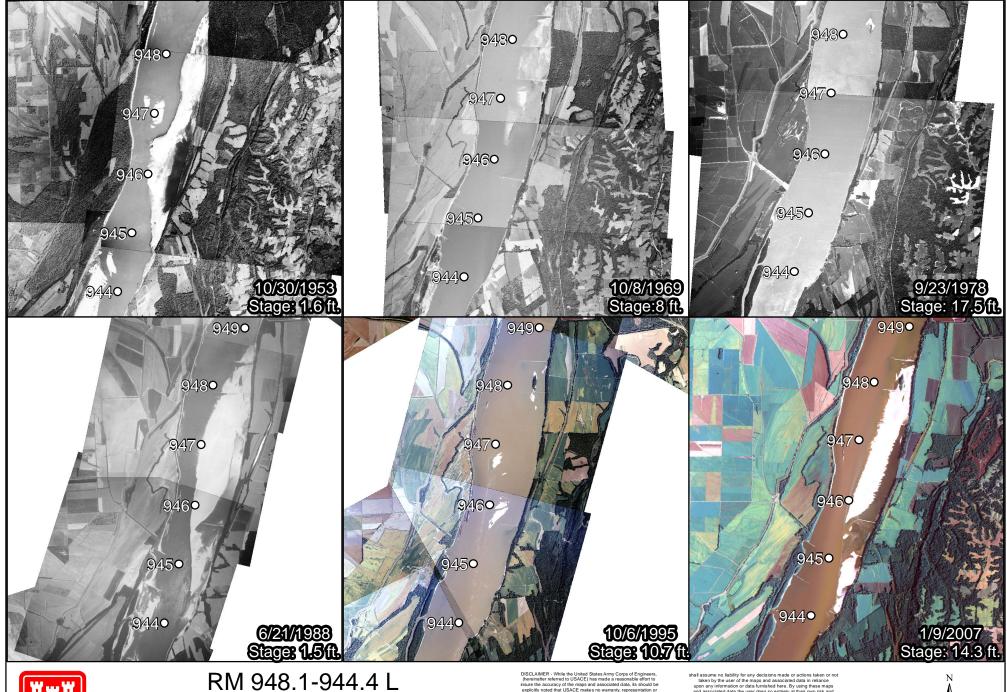


Figure A1. Memphis District Reach A river miles 948-898.







RM 948.1-944.4 L Chute of Island No. 1 Dikes

1:100,000 Distance to gage: 24 river miles

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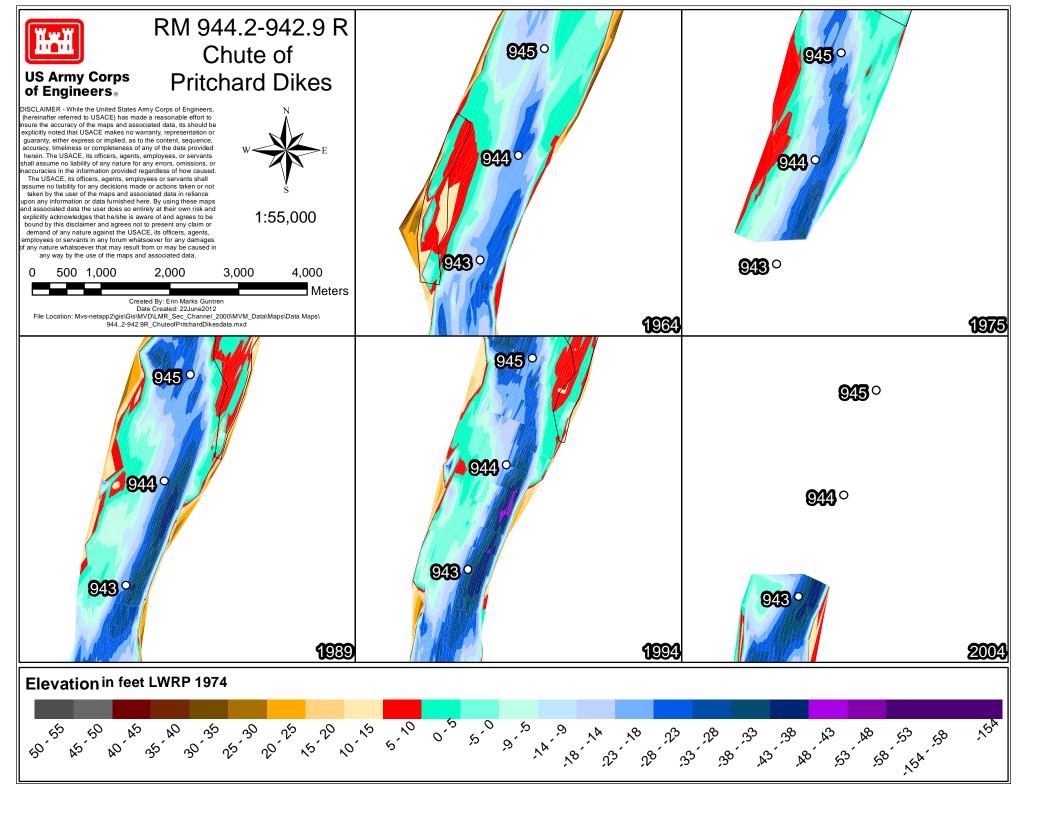


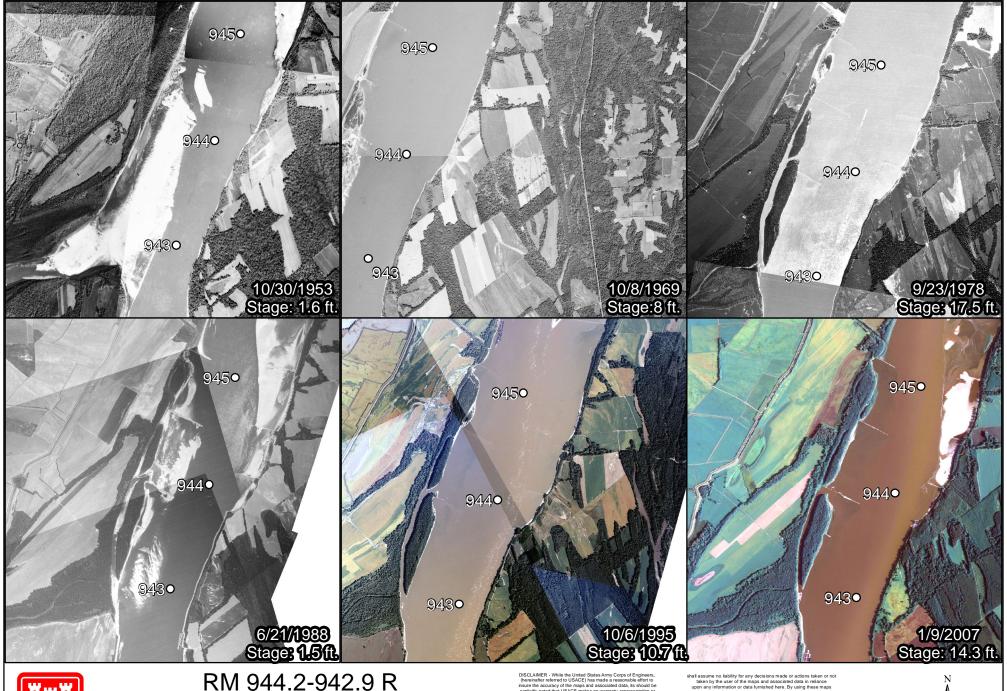
0 1,125 2,250

4,500

6,750

9,000







RM 944.2-942.9 R Chute of Pritchard Dikes

1:55,000 Distance to gage: 23 river miles

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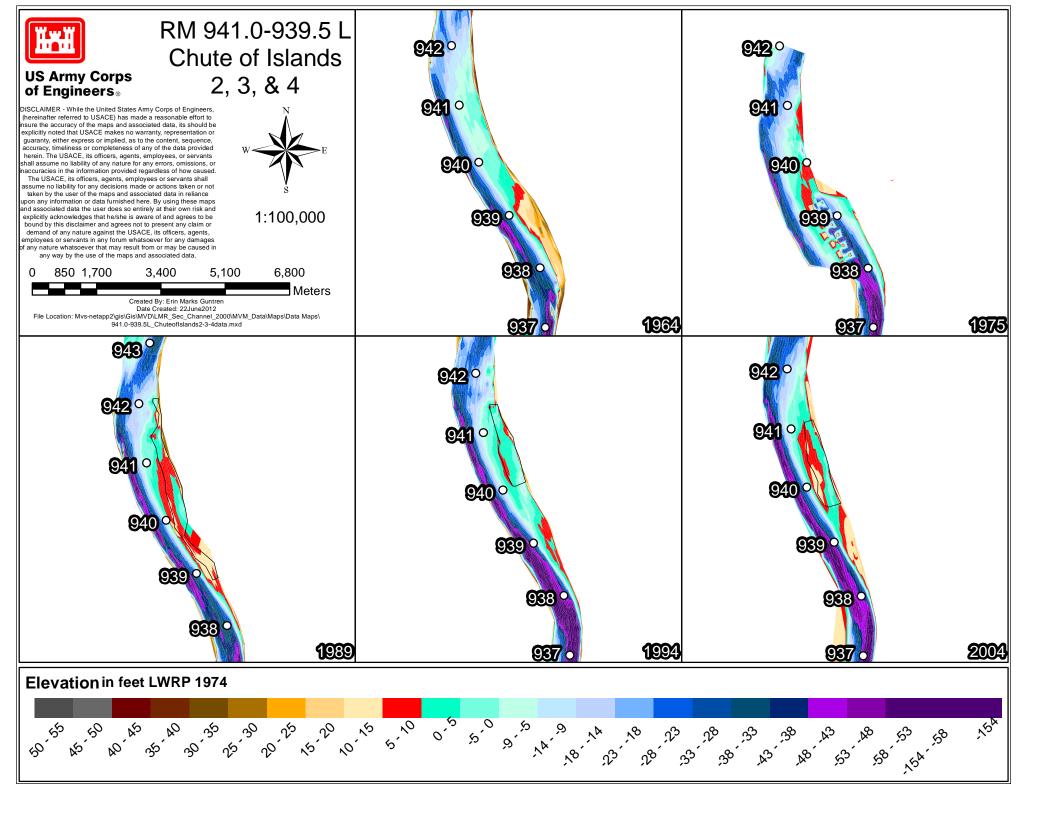
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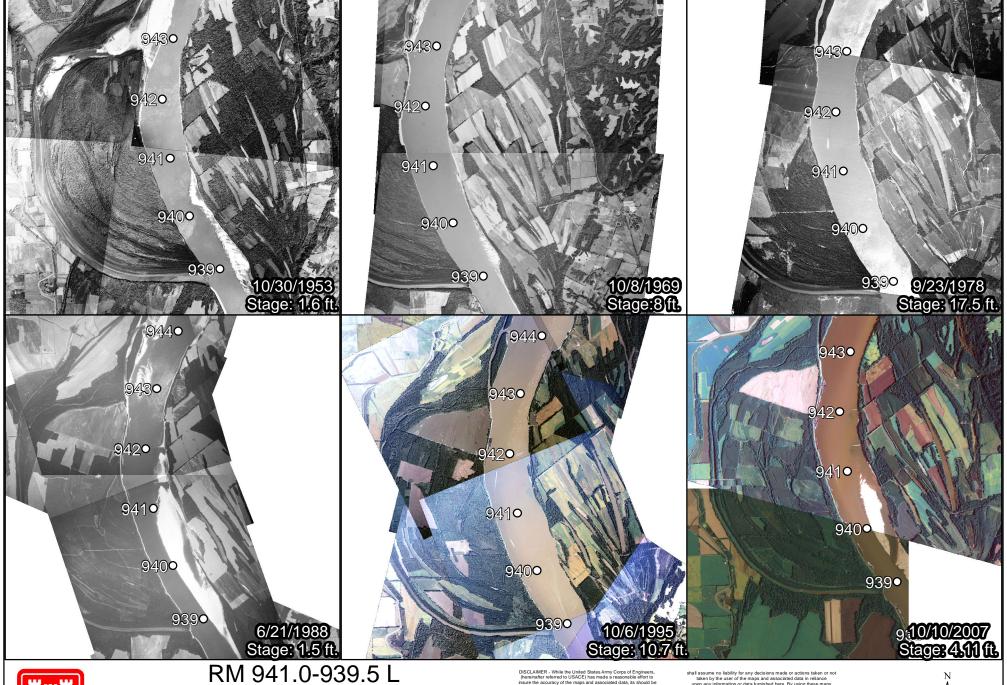
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Meters

625 1,250 2,500 3,750 5,000







RM 941.0-939.5 L Chute of Islands 2, 3, & 4

1:100,000 Distance to gage: 19 river miles

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Date Created: 26June2012
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940.1-939.5L_ChuteofIslands-2-3-4photos.mxd

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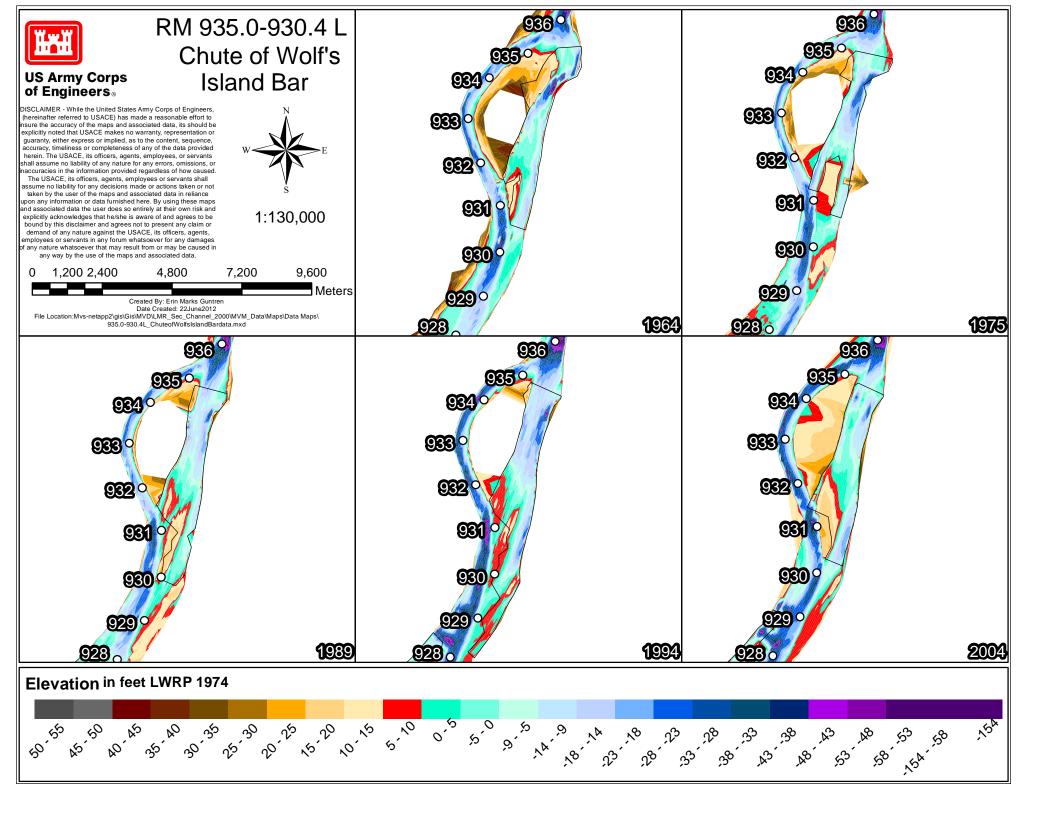


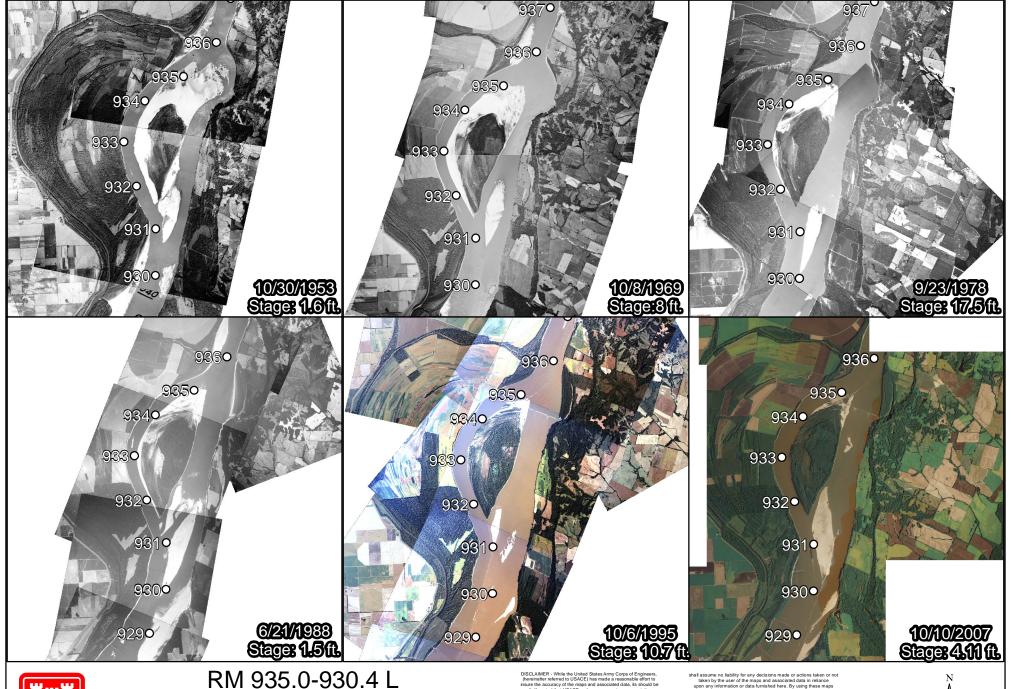
0 1,125 2,250

4,500

6,750

9,000







RM 935.0-930.4 L Chute of Wolf's Island Bar

1:130,000 Distance to gage: 10 river miles

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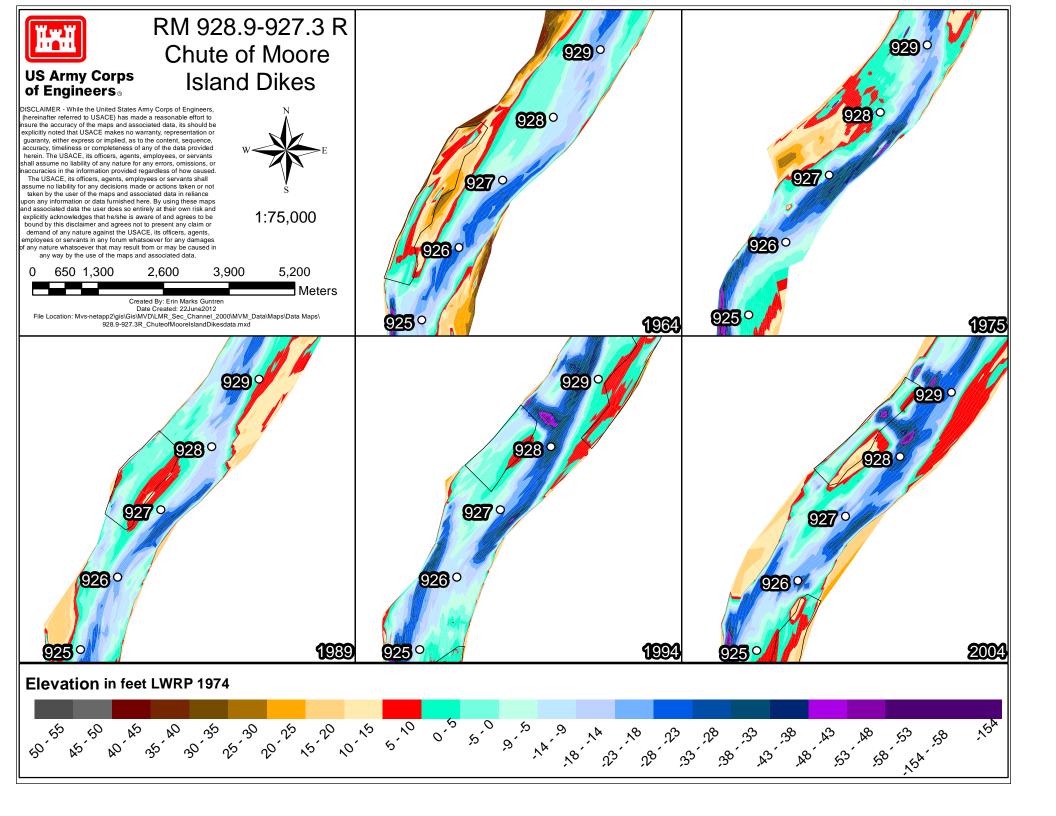
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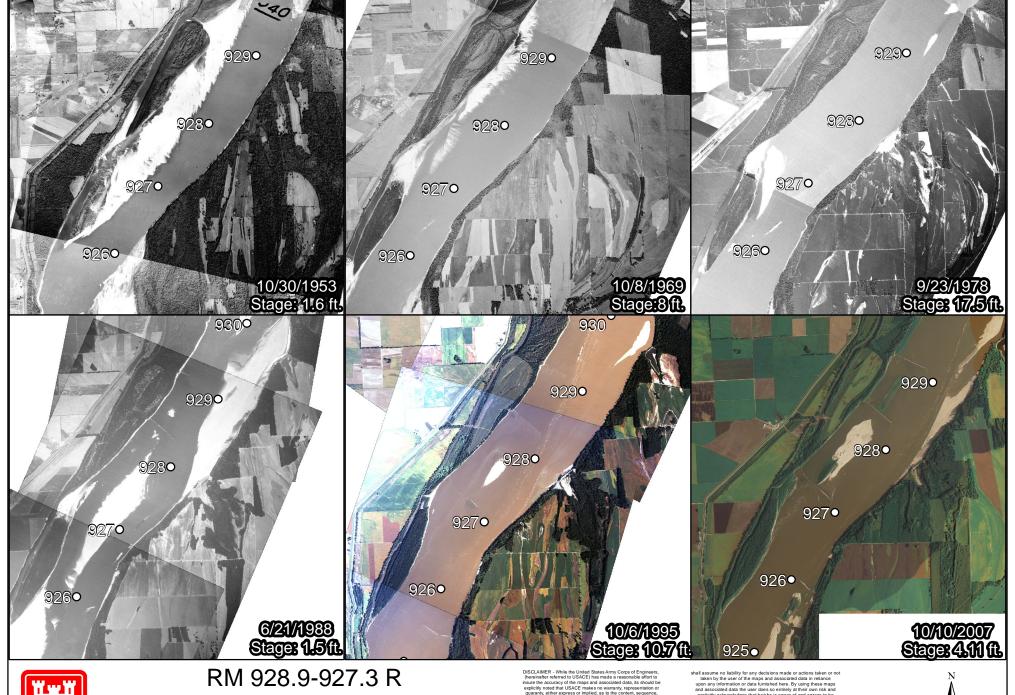


1,450 2,900

5,800

8,700 11,600







Chute of Moore Island Dikes

1:75,000 Distance to gage: 6 river miles

Created by: Erin Marks Guntren

Date Created: 26June2012 $\label{lem:path:mvs-netapp2} File Path: Mvs-netapp2 \\ Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data\Ma$ 928.9-927.3R_ChuteofMoorelslandDikesphots.mxd

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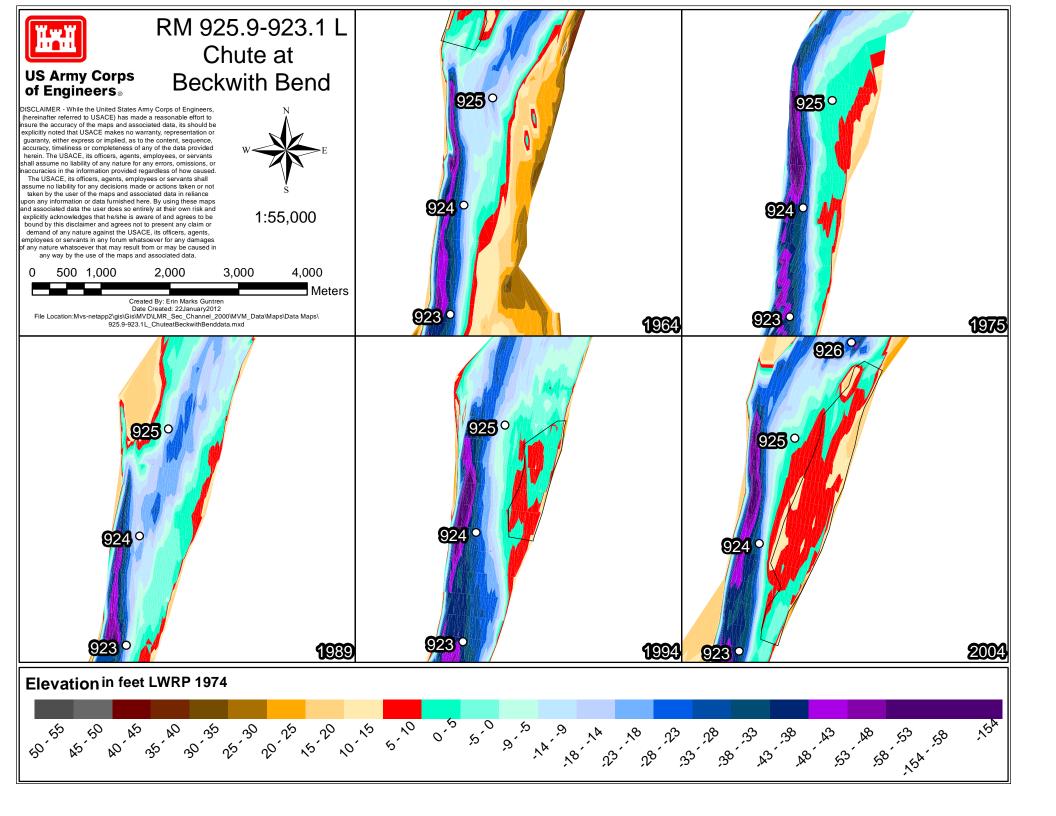
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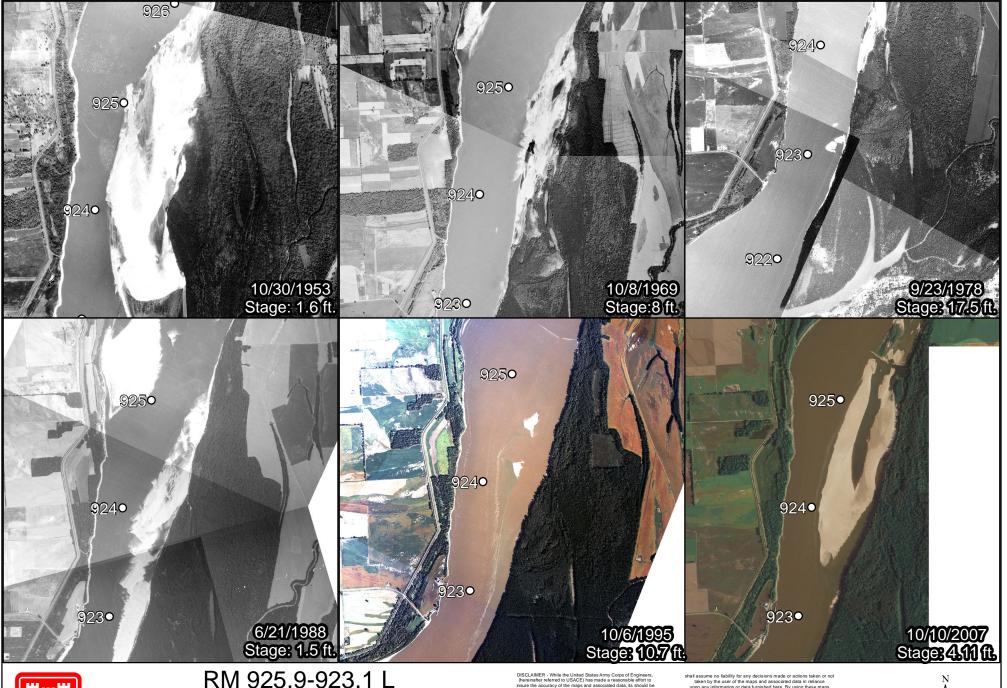
2.25

3

Miles









RM 925.9-923.1 L Chute at Beckwith Bend

1:55,000 Distance to gage: 2 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
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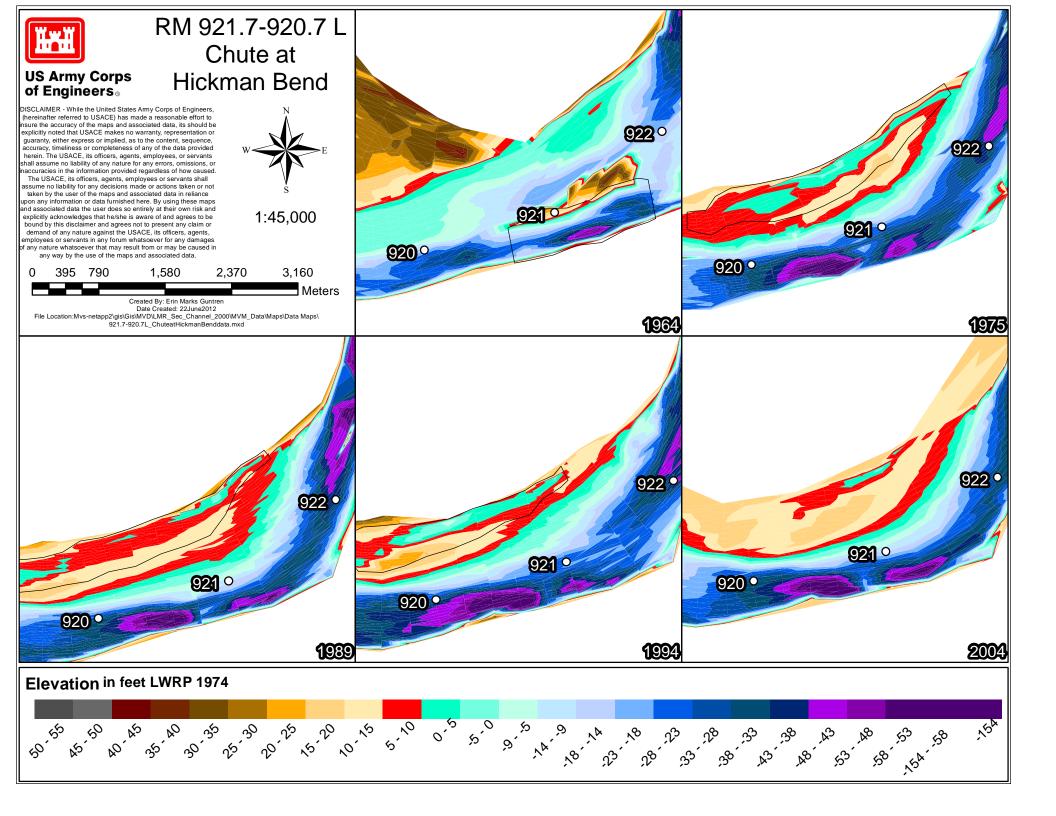
3,750

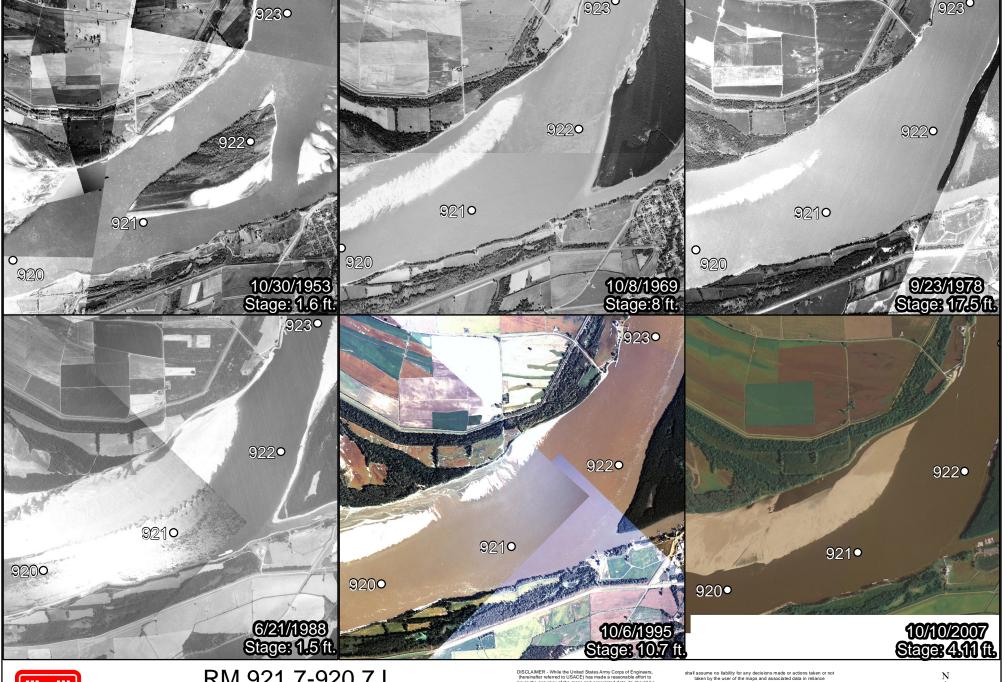


625 1,250

2,500

5,000







RM 921.7-920.7 L Chute at Hickman Bend

1:45,000 Distance to gage: 1 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVDILME_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
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500 1,000

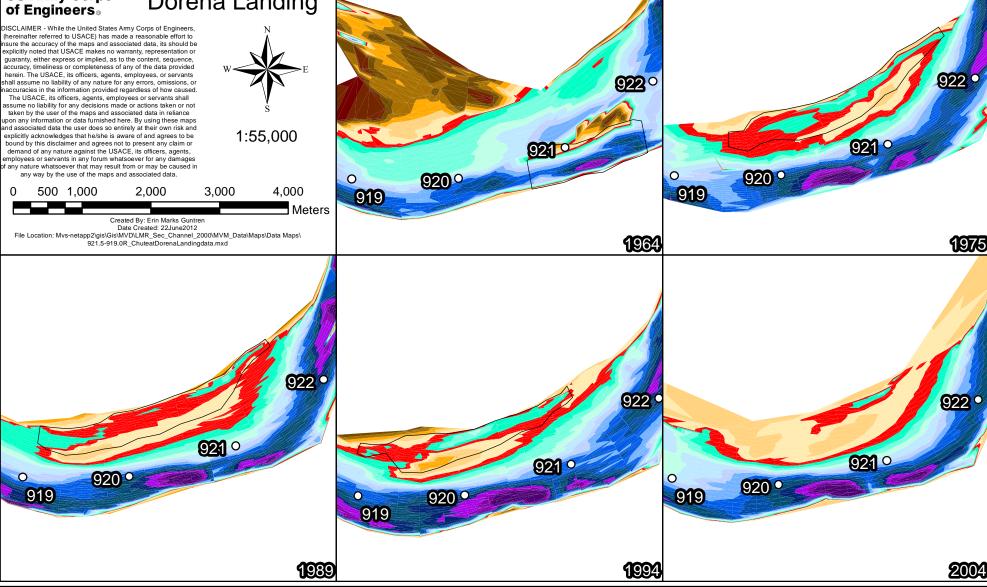
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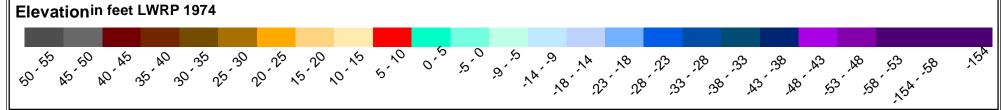
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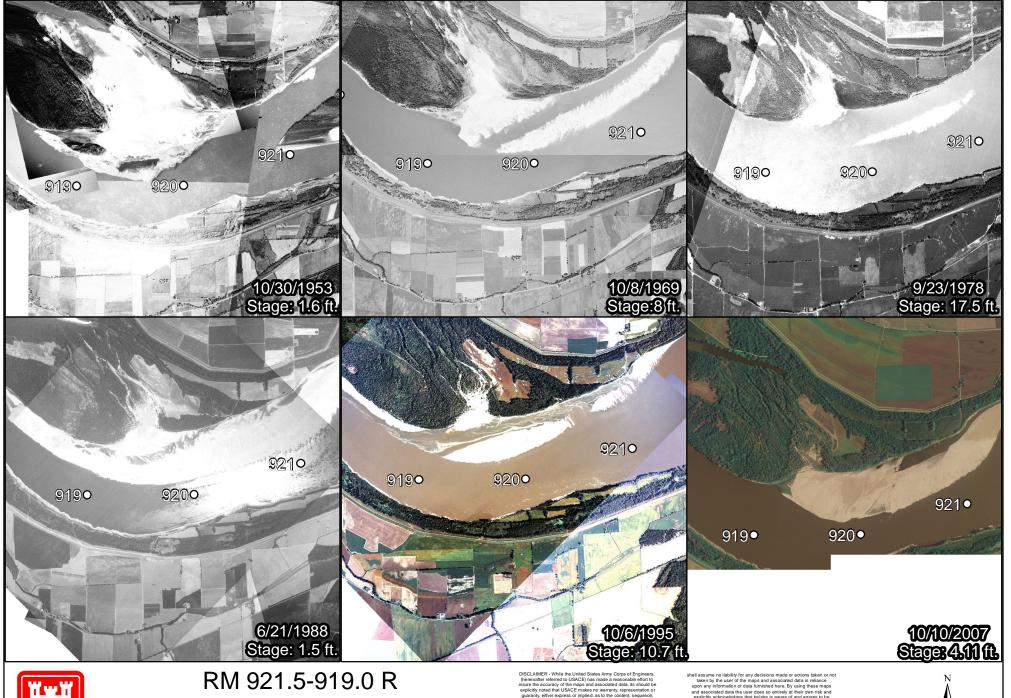
4,000

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RM 921.5-919.0 R Chute at Dorena Landing









Chute at Dorena Landing

Distance to gage: 2 river miles 1:55,000

Created by: Erin Marks Guntren Date Created: 27June2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 921.5-919.0R_ChuteatDorenaLandingphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, (heerinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be engineering to the engineering the state of the engineering the express of implied, as to the content, sequence, accuracy, timethese or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants hall assume no bability of any nature for any errors, ormisions, or inaccuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or everwants.

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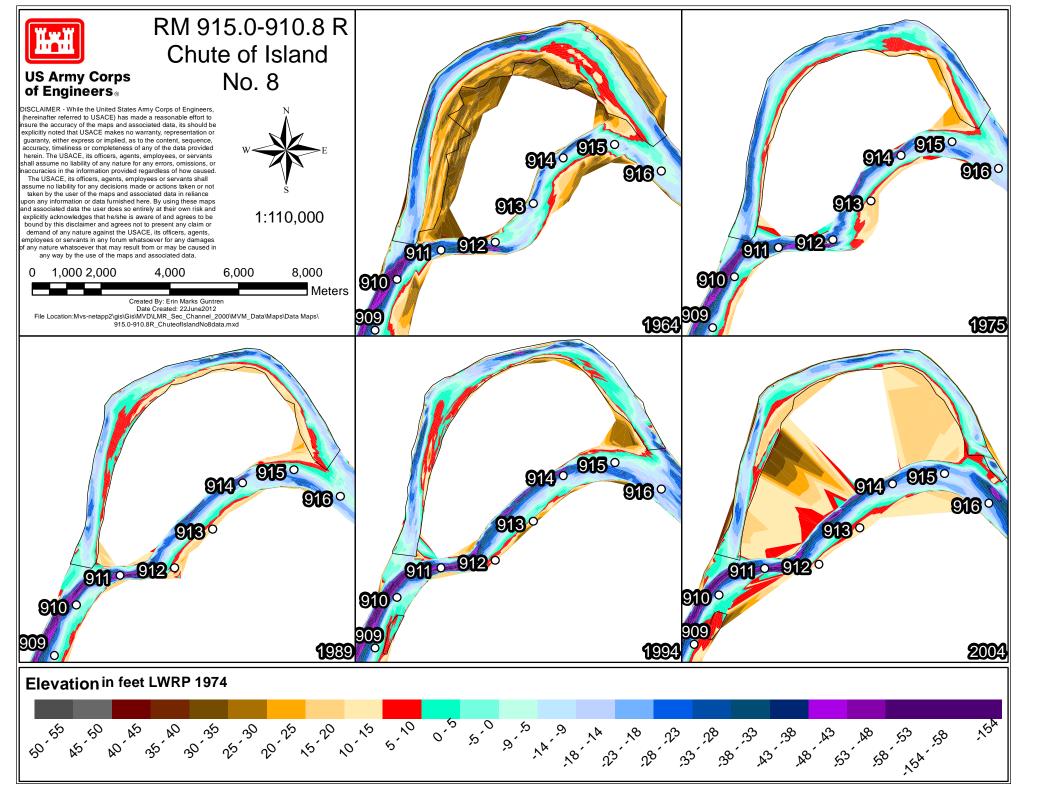


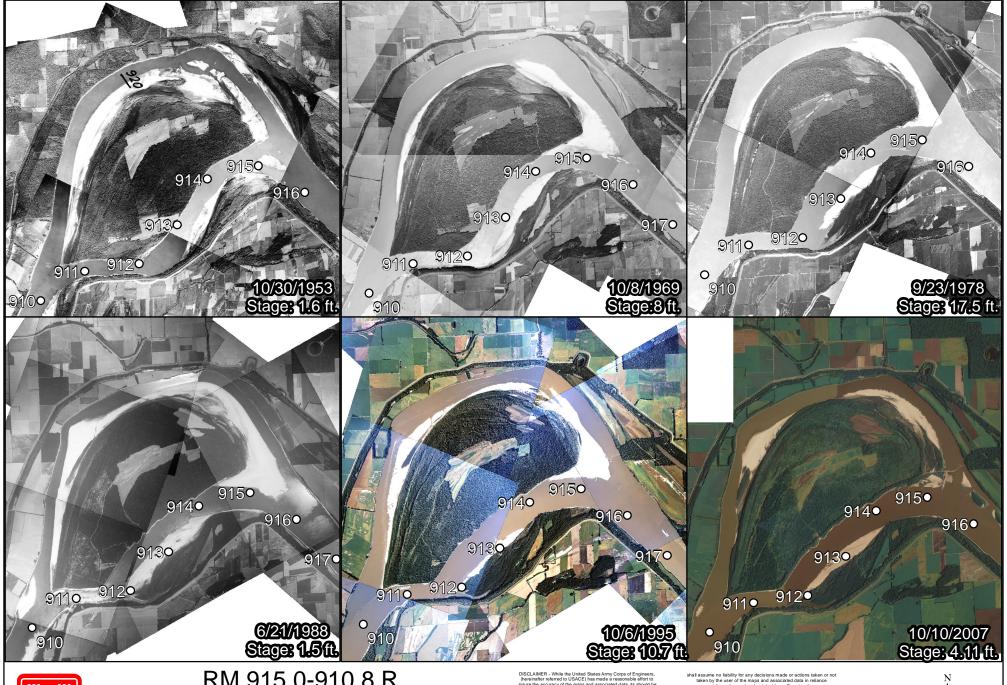
1,250

2,500

3,750

5,000 Meters







RM 915.0-910.8 R Chute of Island No. 8

1:110,000 Distance to gage: 7 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MvD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
915.0-910.8R_Chuteofisland\08photos.mxd

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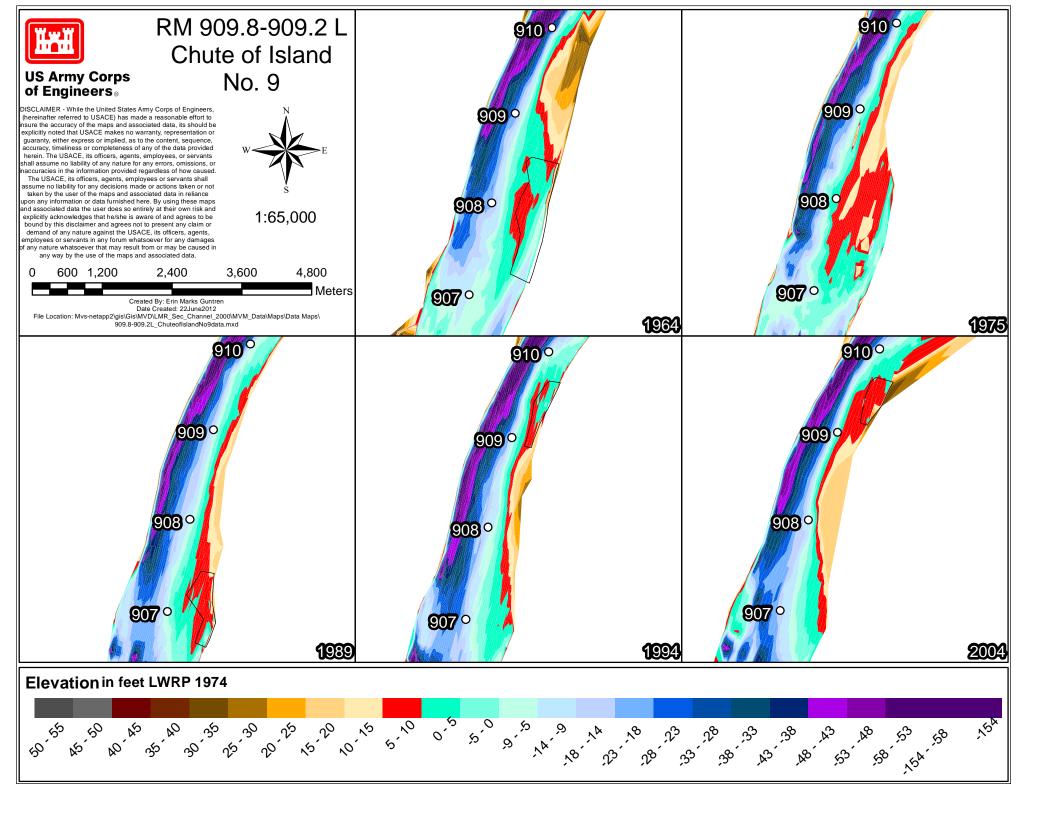


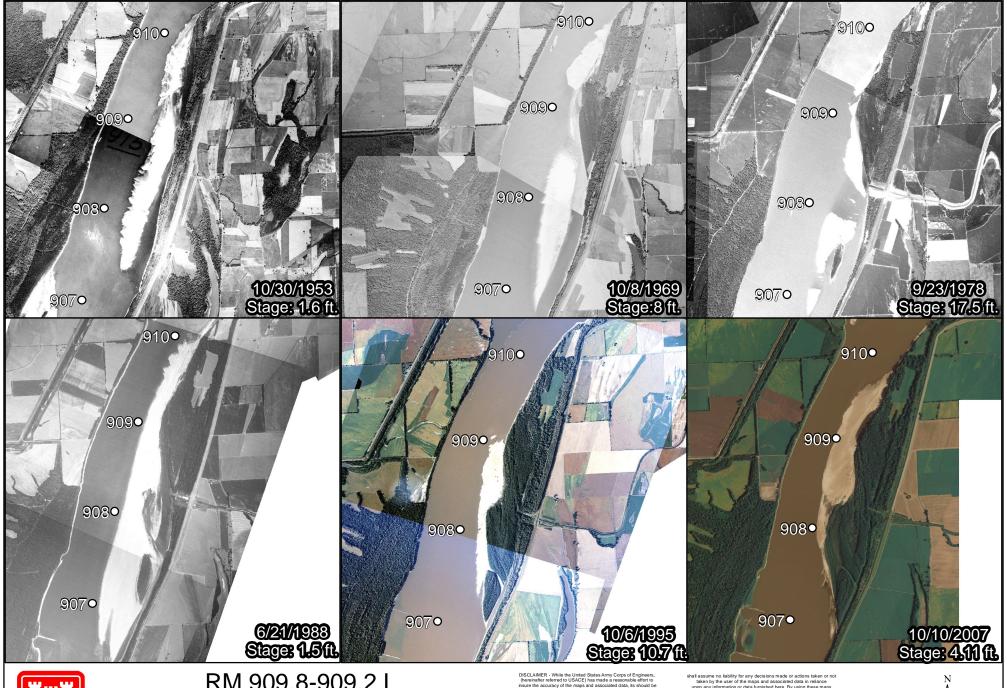
1,250 2,500

5,000

7,500

10,000







RM 909.8-909.2 L Chute of Island No. 9

1:65,000 Distance to gage: 14 river miles

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Date Created: 27.June2012
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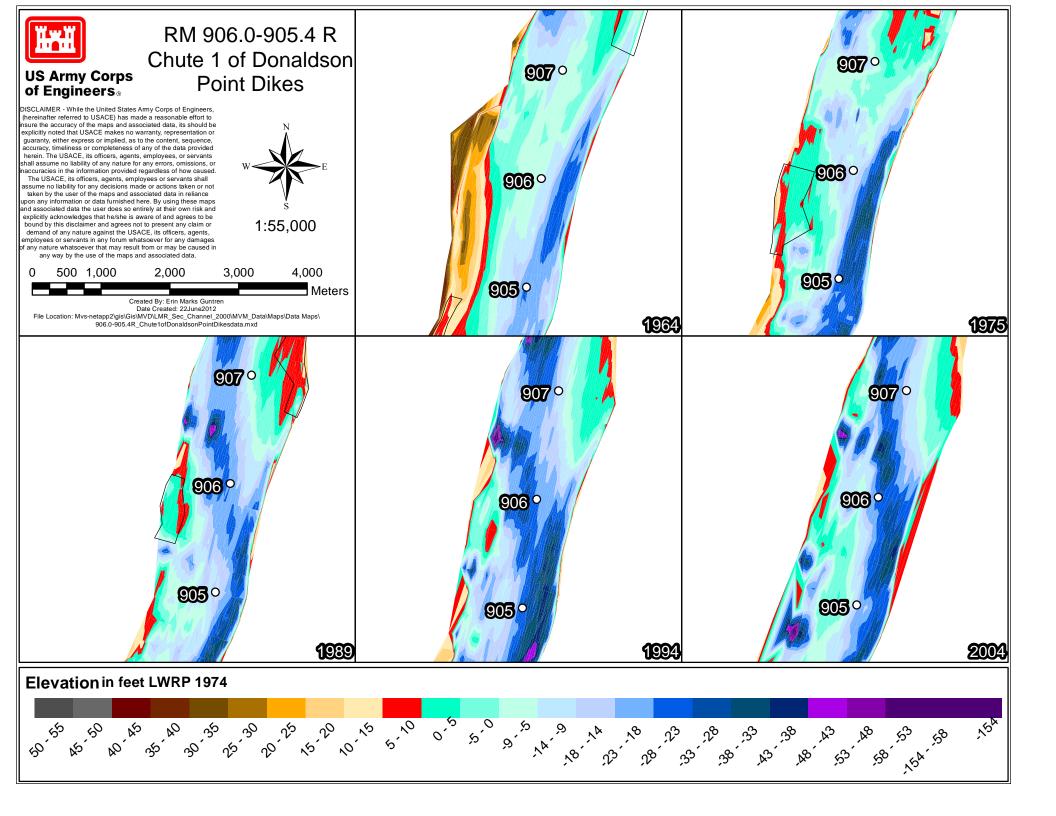
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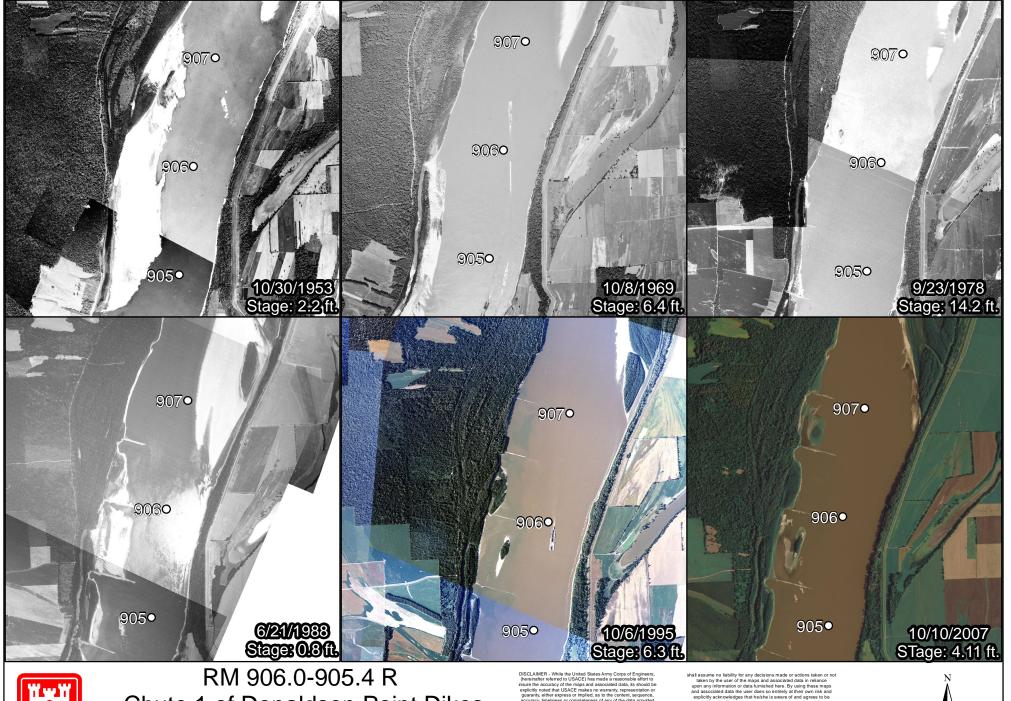


700 1,400 2,800 4,200

Meters

5,600







Chute 1 of Donaldson Point Dikes

US Army Corps of Engineers_®

1:55,000 Distance to gage: 16 river miles

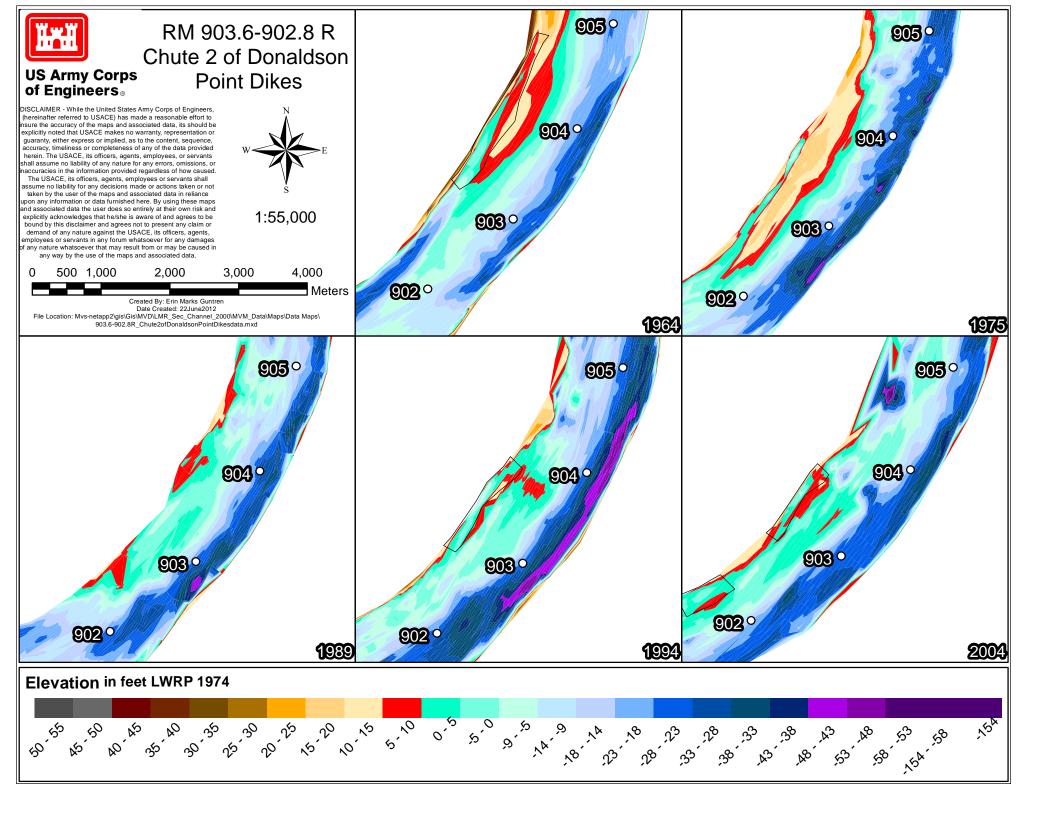
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906.0-905.4R_Chute1ofDonaldsonPointDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

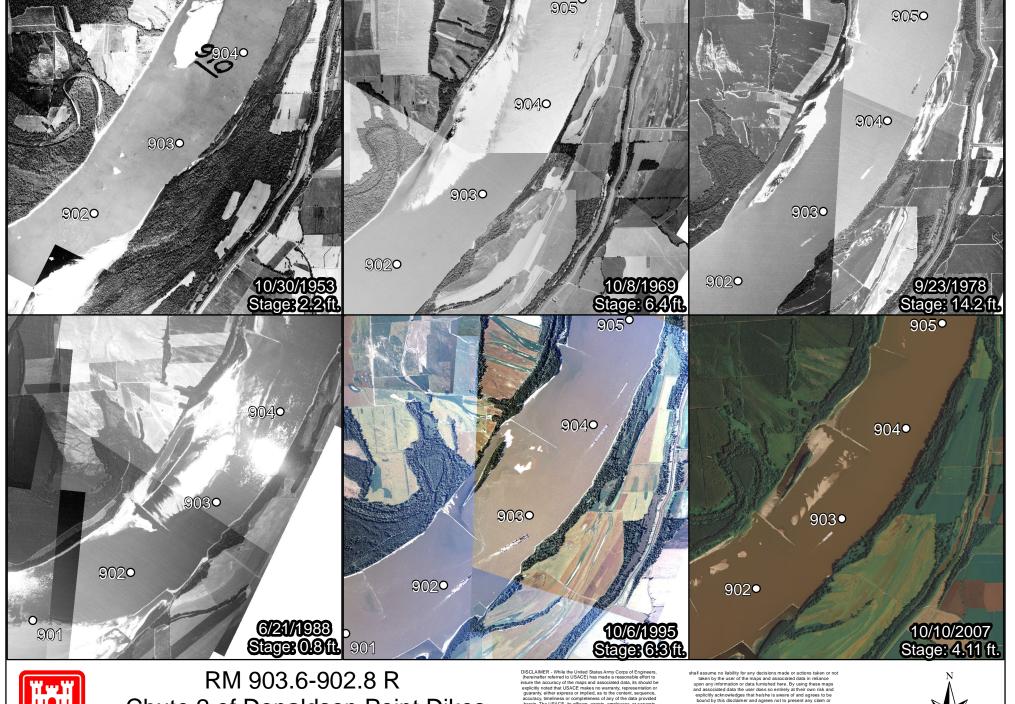
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1,250 2,500 3,750

5,000







Chute 2 of Donaldson Point Dikes

US Army Corps of Engineers_®

1:55,000 Distance to gage: 14 river miles

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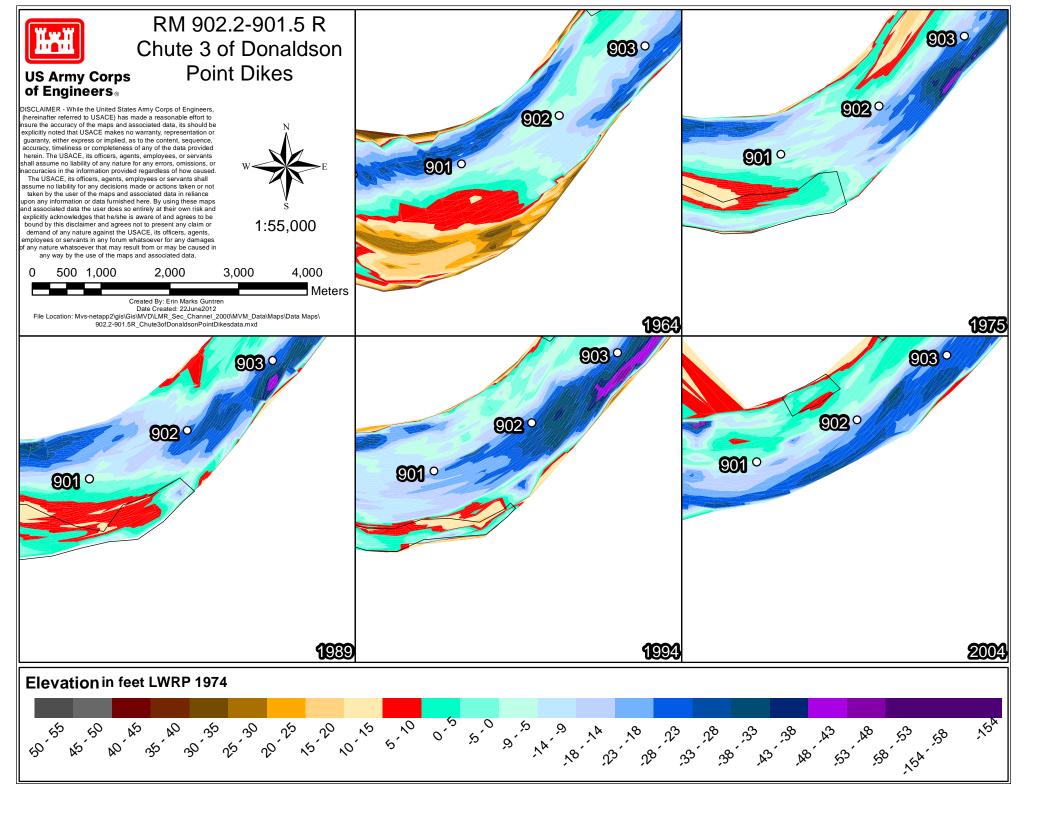
3,600

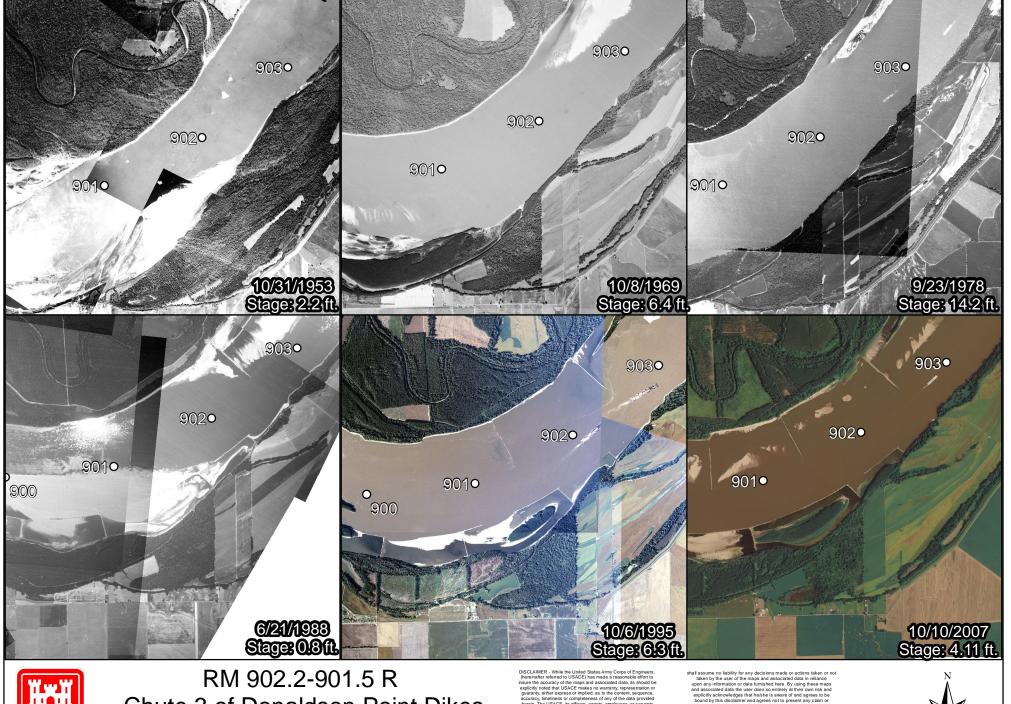


2,400 1,200

Meters

4,800







Chute 3 of Donaldson Point Dikes

US Army Corps of Engineers_®

1:55,000 Distance to gage: 13 river miles

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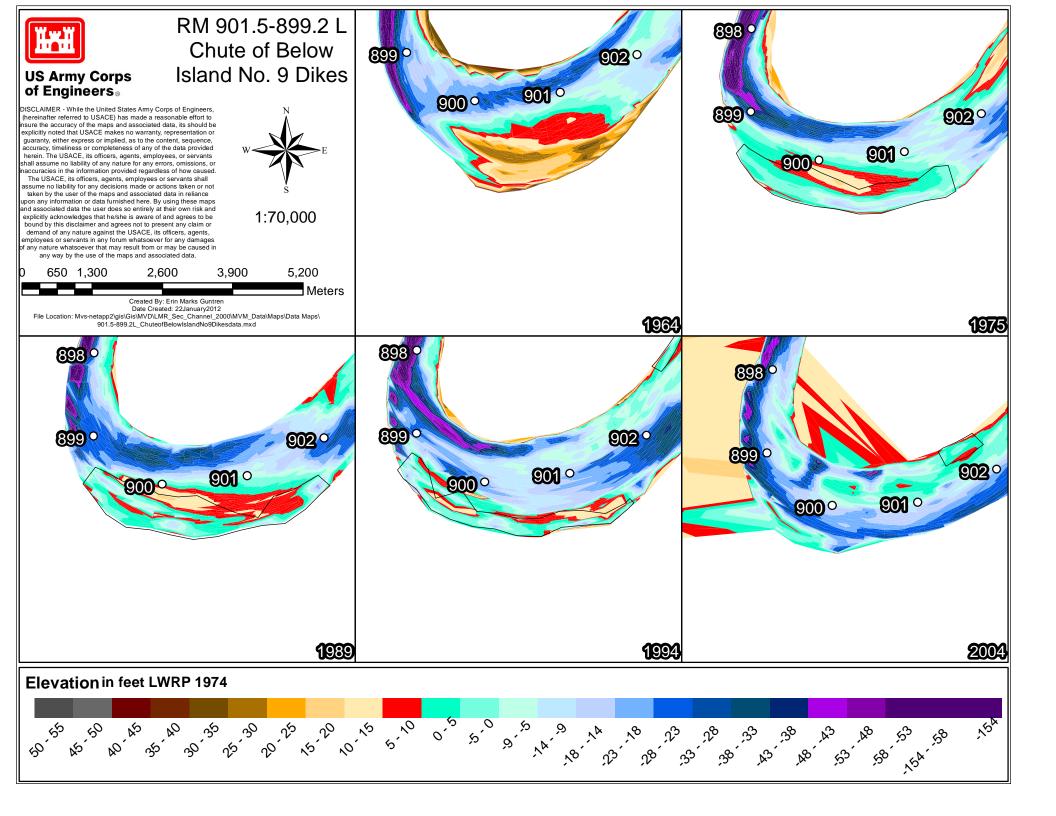
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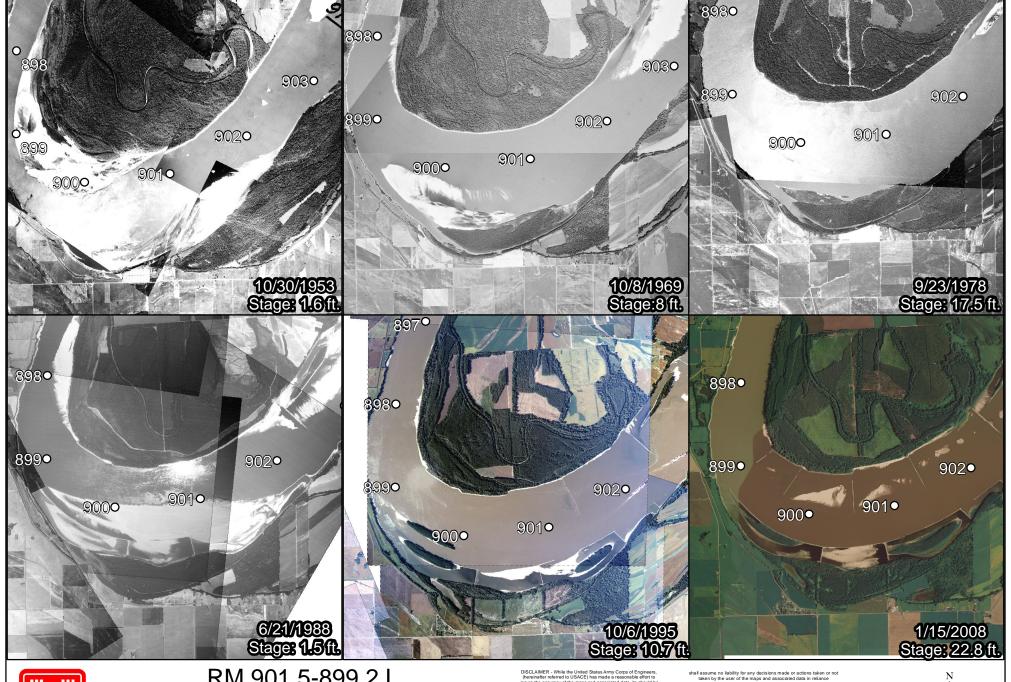
3,600



2,400 1,200

4,800 Meters







RM 901.5-899.2 L Chute of Below Island No. 9 Dikes

US Army Corps of Engineers

1:70,000

Distance to gage: 12 river miles

Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 901.5-899.2L ChuteofBelowIslandNo9Dikesphotos.mxd

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4,500



1,500 3,000 750

6,000

Appendix B: Reach B – River Miles 898-848 Memphis District

Fourteen secondary channels were identified in Reach B (see below). Only eight secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table B1. Secondary channels and their upstream river mile for Reach B; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute of Hotchkiss Bend Dikes	895.5L	Chute of Island 11 Dikes	882.2R	Chute of Hathaway Dikes	854.5L
Chute 1 at Kentucky Point	891.8L	Chute of Marr Towhead	876.7L	Chute of Robinson Bayou Dikes	854.1R
Chute of Morrison Towhead	890.5R	Chute of Stewart Towhead Dikes	873.3R		
Chute of New Madrid Bar	888.5R	Chute of Below Cherokee Dikes	866.6L		
Chute 3 of Kentucky Point Dikes	887.9L	Chute of Lee Towhead	859.4L		
Chute 2 Outside Kentucky Point Dikes	887.5L	Chute of Island 14	859.2R		

Reach Summary

Table B2. Sum of Reach B area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)		Volume	e (yds³)
	cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	400	850	1,540	2,150	7,480,000	32,091,000
1975	100%	440	970	1,880	2,480	9,103,000	38,526,000
1994	100%	910	1,480	2,380	3,350	23,030,000	61,735,000
2004	98%	380	570	930	1,400	10,364,000	25,787,000

Table B3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach B. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Voor	Voor Curd		Area	(Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Hotchkiss Bend Dikes	895.5-893.6L	1964	100%	70	150	220	290	1,390,000	4,914,000
Chute of Hotchkiss Bend Dikes	895.5-893.6L	1975	100%	0	0	0	0	0	0
Chute of Hotchkiss Bend Dikes	895.5-893.6L	1989	100%	50	80	170	260	1,234,000	3,887,000
Chute of Hotchkiss Bend Dikes	895.5-893.6L	1994	100%	30	60	120	210	492,000	2,577,000
Chute of Hotchkiss Bend Dikes	895.5-893.6L	2004	100%	0	10	30	130	35,000	769,000
Chute 1 at Kentucky Point	891.8-891L	1964	100%	0	0	0	0	0	0
Chute 1 at Kentucky Point	891.8-891L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 at Kentucky Point	891.8-891L	1989	98%	0	0	50	90	0	756,000
Chute 1 at Kentucky Point	891.8-891L	1994	100%	0	0	0	0	0	0
Chute 1 at Kentucky Point	891.8-891L	2004	100%	0	0	0	0	0	0
Chute of Morrison Towhead	890.5- 889.5R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Morrison Towhead	890.5- 889.5R	1975	98%	90	90	90	90	4,791,000	6,309,000
Chute of Morrison Towhead	890.5- 889.5R	1989	100%	10	30	60	110	268,000	1,337,000
Chute of Morrison Towhead	890.5- 889.5R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Morrison Towhead	890.5- 889.5R	2004	100%	0	10	30	50	87,000	551,000
Chute of New Madrid Bar	888.5- 886.4R	1964	100%	60	210	430	550	1,344,000	7,988,000
Chute of New Madrid Bar	888.5- 886.4R	1975	100%	170	420	580	640	3,582,000	12,726,000
Chute of New Madrid Bar	888.5- 886.4R	1989	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of New Madrid Bar	888.5- 886.4R	1994	100%	460	520	550	560	13,641,00 0	22,409,000

Casandan, Ohannal	River	Voor	Q.,,,,,		Area	(Acres)		Volun	ne (yd³)
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of New Madrid Bar	888.5- 886.4R	2004	100%	290	380	470	530	8,389,000	15,919,000
Chute 3 of Kentucky Point Dikes	887.9-883.4L	1964	100%	0	0	0	0	0	0
Chute 3 of Kentucky Point Dikes	887.9-883.4L	1975	100%	200	260	310	370	3,896,000	8,898,000
Chute 3 of Kentucky Point Dikes	887.9-883.4L	1989	100%	60	200	460	660	1,752,000	8,981,000
Chute 3 of Kentucky Point Dikes	887.9-883.4L	1994	100%	170	380	620	780	3,566,000	13,323,000
Chute 3 of Kentucky Point Dikes	887.9-883.4L	2004	100%	0	0	0	0	0	0
Chute 2 Outside Kentucky Point Dikes	887.5-885.3L	1964	100%	0	0	0	0	0	0
Chute 2 Outside Kentucky Point Dikes	887.5-885.3L	1975	100%	0	0	0	0	0	0
Chute 2 Outside Kentucky Point Dikes	887.5-885.3L	1989	100%	0	10	50	110	6,000	842,000
Chute 2 Outside Kentucky Point Dikes	887.5-885.3L	1994	100%	10	30	150	240	130,000	2,440,000
Chute 2 Outside Kentucky Point Dikes	887.5-885.3L	2004	100%	0	0	0	0	0	0
Chute of Island 11 Dikes	882.2- 880.5R	1964	100%	0	0	0	0	0	0
Chute of Island 11 Dikes	882.2- 880.5R	1975	100%	0	0	0	0	0	0
Chute of Island 11 Dikes	882.2- 880.5R	1989	100%	20	40	70	160	557,000	1,953,000
Chute of Island 11 Dikes	882.2- 880.5R	1994	100%	50	80	150	190	860,000	3,213,000
Chute of Island 11 Dikes	882.2- 880.5R	2004	100%	0	0	0	0	0	0
Chute of Marr Towhead	876.7-875.4L	1964	100%	0	0	0	0	0	0
Chute of Marr Towhead	876.7-875.4L	1975	100%	0	0	10	60	0	248,000
Chute of Marr Towhead	876.7-875.4L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Marr Towhead	876.7-875.4L	1994	100%	0	0	0	0	0	0
Chute of Marr Towhead	876.7-875.4L	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Stewart Towhead Dikes	873.3-868R	1964	100%	270	490	800	1,090	4,741,000	17,613,000

Casandan, Ohannal	River	Vaar	Q.,,,,,		Area	(Acres)		Volun	Volume (yd ³)	
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Stewart Towhead Dikes	873.3-868R	1975	100%	80	230	630	770	1,506,000	10,753,000	
Chute of Stewart Towhead Dikes	873.3-868R	1989	80%	40	120	310	570	747,000	6,125,000	
Chute of Stewart Towhead Dikes	873.3-868R	1994	100%	200	410	740	1,110	4,339,000	16,401,000	
Chute of Stewart Towhead Dikes	873.3-868R	2004	80%	90	180	420	740	1,940,000	9,099,000	
Chute of Below Cherokee Dikes	866.6-862.2L	1964	100%	0	0	80	230	5,000	1,575,000	
Chute of Below Cherokee Dikes	866.6-862.2L	1975	100%	0	40	230	450	101,000	3,885,000	
Chute of Below Cherokee Dikes	866.6-862.2L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Below Cherokee Dikes	866.6-862.2L	1994	100%	0	0	0	0	0	0	
Chute of Below Cherokee Dikes	866.6-862.2L	2004	100%	0	0	0	0	0	0	
Chute of Lee Towhead	859.4-857.8L	1964	100%	210	640	1,12 0	1,390	7,489,000	24,808,000	
Chute of Lee Towhead	859.4-857.8L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Lee Towhead	859.4-857.8L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Lee Towhead	859.4-857.8L	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Lee Towhead	859.4-857.8L	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Island 14	859.2- 856.5R	1964	100%	0	0	0	0	0	0	
Chute of Island 14	859.2- 856.5R	1975	100%	0	10	140	240	18,000	2,263,000	
Chute of Island 14	859.2- 856.5R	1989	100%	0	0	40	210	13,000	1,231,000	
Chute of Island 14	859.2- 856.5R	1994	100%	0	0	50	260	0	1,372,000	
Chute of Island 14	859.2- 856.5R	2004	100%	0	0	0	0	0	0	
Chute of Hathaway Dikes	854.5-851.5L	1964	100%	90	110	160	240	2,626,000	5,264,000	
Chute of Hathaway Dikes	854.5-851.5L	1975	100%	100	270	430	570	2,195,000	9,056,000	

Secondary Channel	River	Year	Cvrg.		Area	(Acres)		Volun	ne (yd³)
Occordary Orlannel	Miles	Teal	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Hathaway Dikes	854.5-851.5L	1989	85%	30	70	140	260	643,000	3,005,000
Chute of Hathaway Dikes	854.5-851.5L	1994	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hathaway Dikes	854.5-851.5L	2004	10%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Robinson Bayou Dikes	854.1-853R	1964	100%	0	0	0	0	0	0
Chute of Robinson Bayou Dikes	854.1-853R	1975	100%	80	100	150	180	1,402,000	3,750,000
Chute of Robinson Bayou Dikes	854.1-853R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Robinson Bayou Dikes	854.1-853R	1994	100%	10	40	90	120	301,000	1,746,000
Chute of Robinson Bayou Dikes	854.1-853R	2004	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

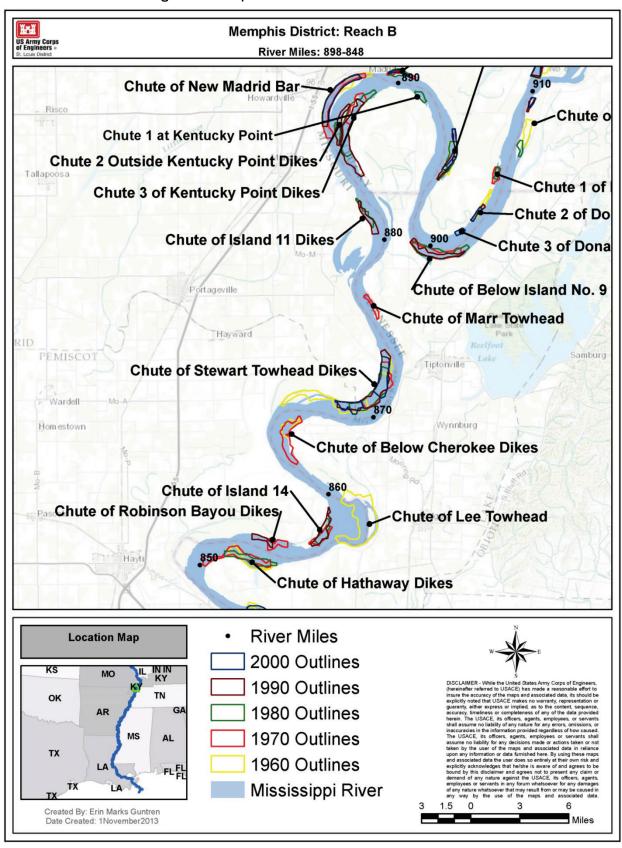
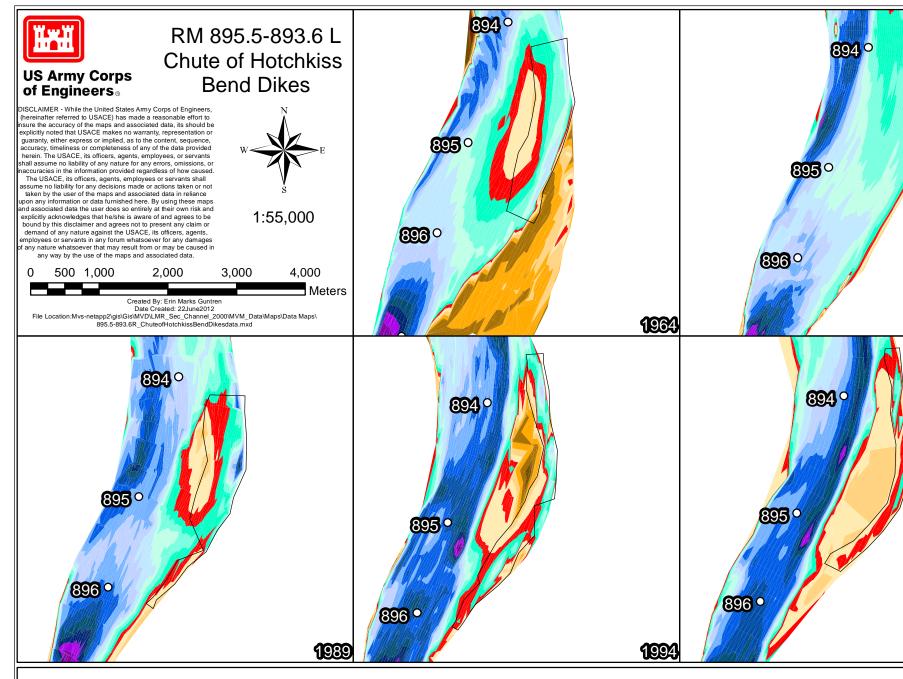
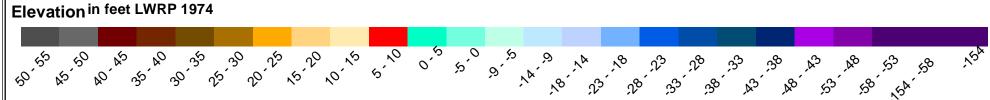
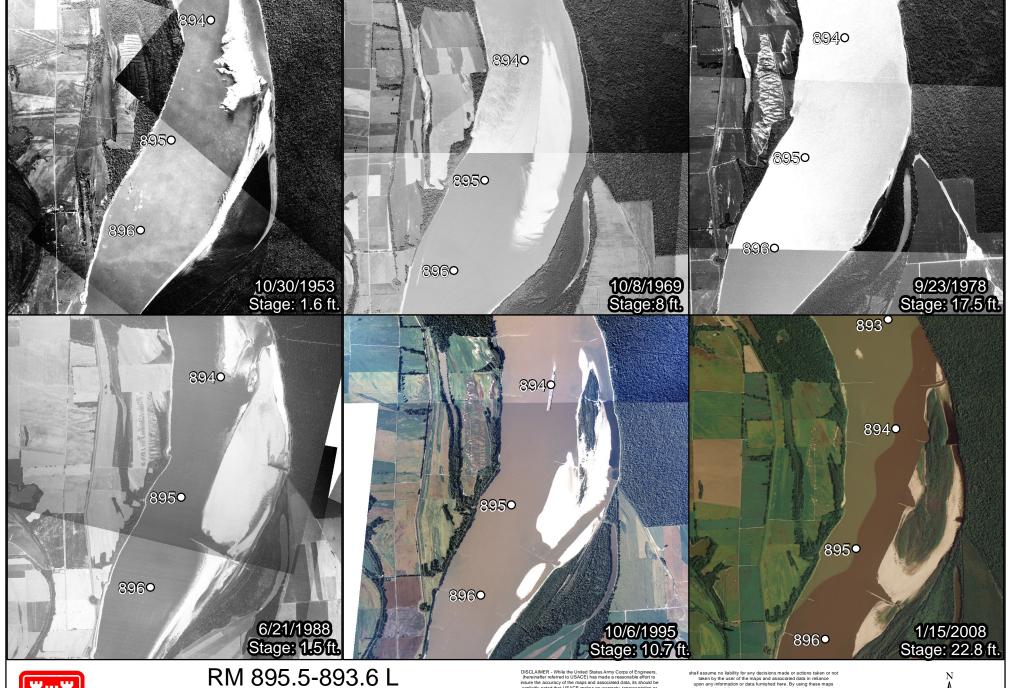


Figure B1. Memphis District Reach B river miles 898-848.









RM 895.5-893.6 L Chute of Hotchkiss Bend Dikes

US Army Corps of Engineers_®

1:55,000 Distance

Distance to gage: 6 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
895.5-893.6R_ChuteofHotchkissBendDikesphotos.mxd

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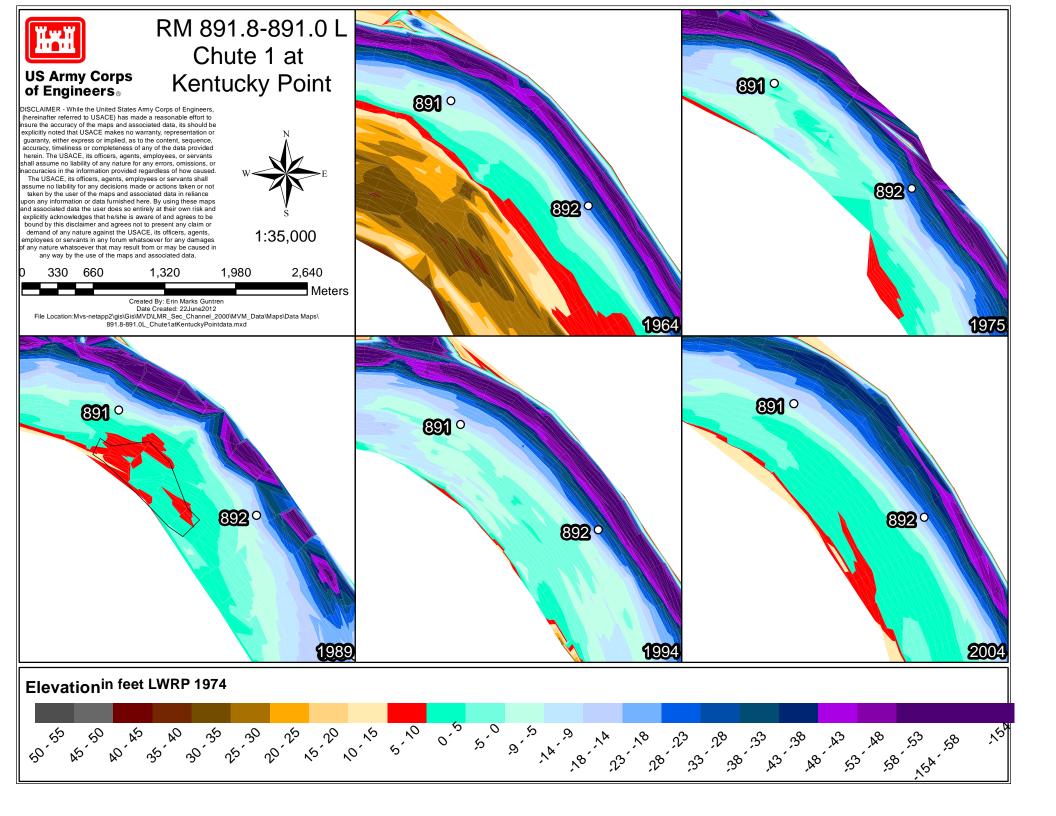
shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data is relained upon any information or data furnhand here. By using these maps of the state o

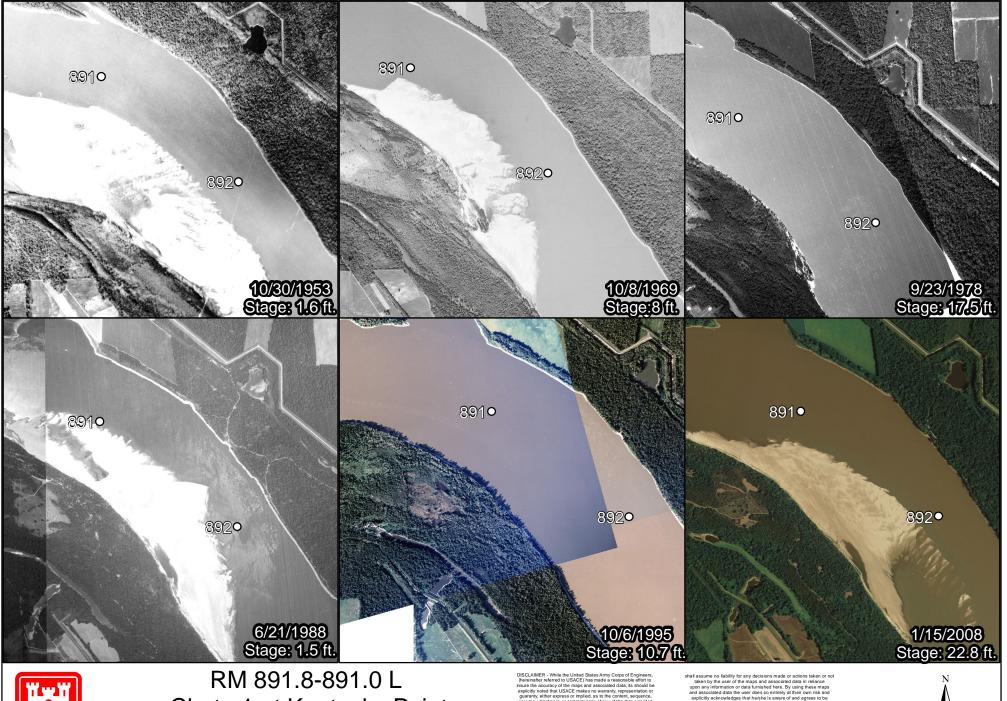
3,600



600 1,200 2,400

4,800







Chute 1 at Kentucky Point

1:35,000

Distance to gage: 2 river miles

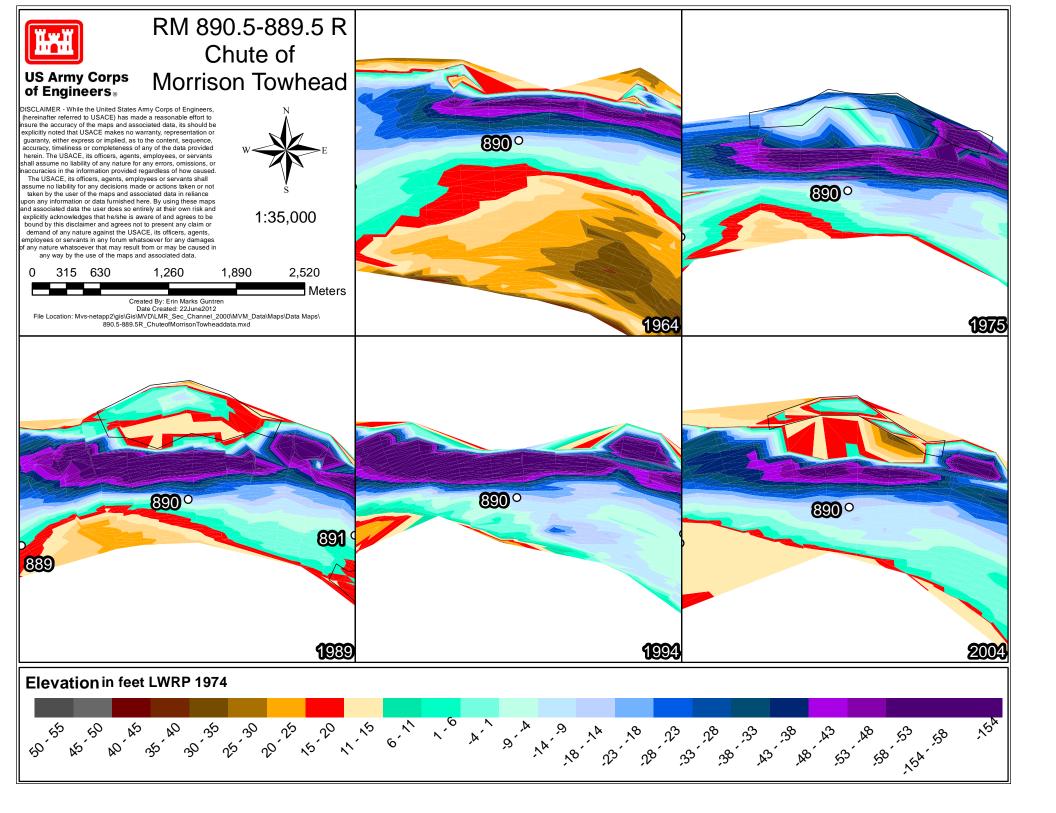
Date Created: 27June2012
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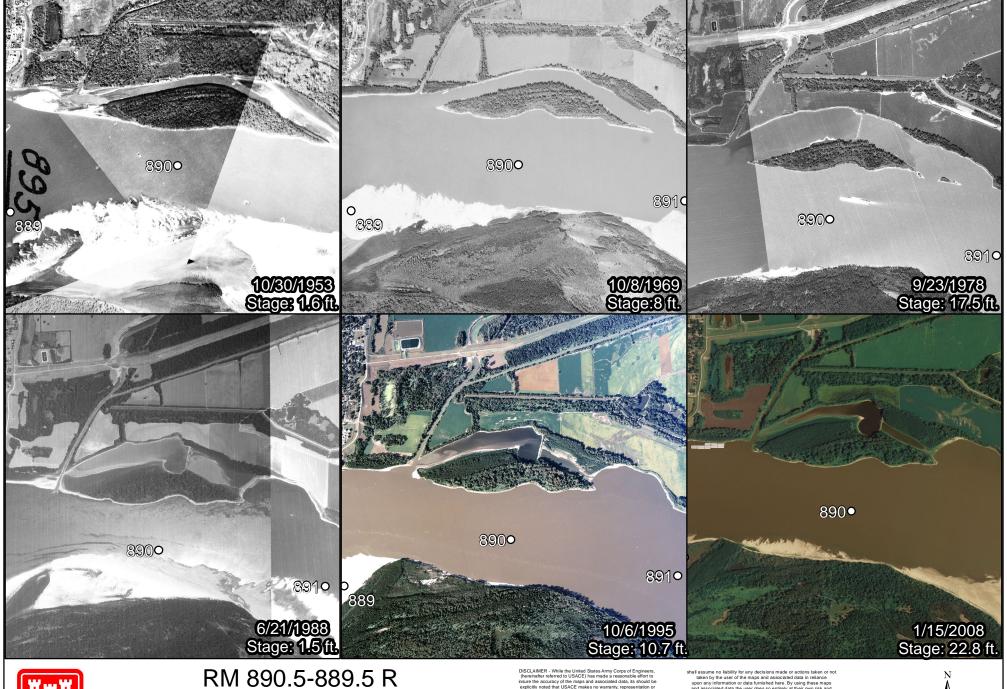
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780 1,560 2,340 3,120 Meters







RM 890.5-889.5 R Chute of Morrison Towhead

1:35,000 Distance to gage: 1 river miles

1:35,000 Distance to gage: 1 river miles

. Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 890.5-889.5R_ChutedfMorrisonTowheadphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, (hereinather referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be proposed to the state of the state of the content, sequence, quaranty, either express or implied, as to the content, sequence, cacuracy, timeliness or completeness of any of the data provided herien. The USACE, its offices, agents, employees, or servants shall assume no basility of any nature for any errors, ormásions, or inaccuraces in the information provided regardess of hior cuaraces The USACE, its officers, agents, employee so servants.

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400 800 1,600 2,400

Meters

3,200

HHH

US Army Corps of Engineers

RM 888.5-886.4 R Chute of New Madrid Bar

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1:70,000

0 650 1,300

2,600

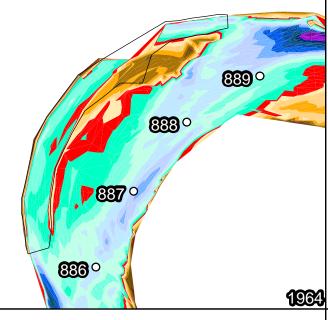
3,900

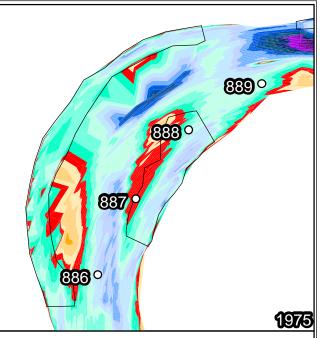
Meters

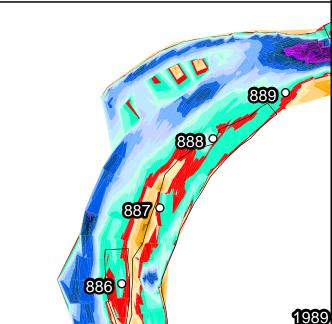
5,200

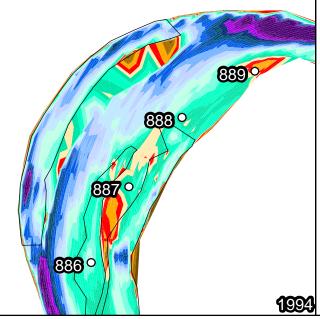
Created By: Erin Marks Guntren Date Created: 22June2012

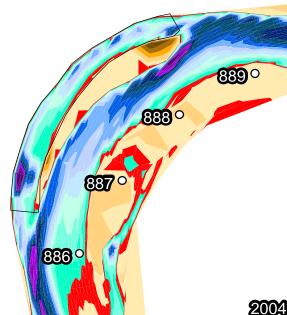
File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
888.5-886.4R ChuteofNewMadridBardata.mxd



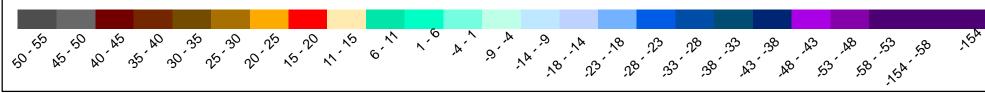


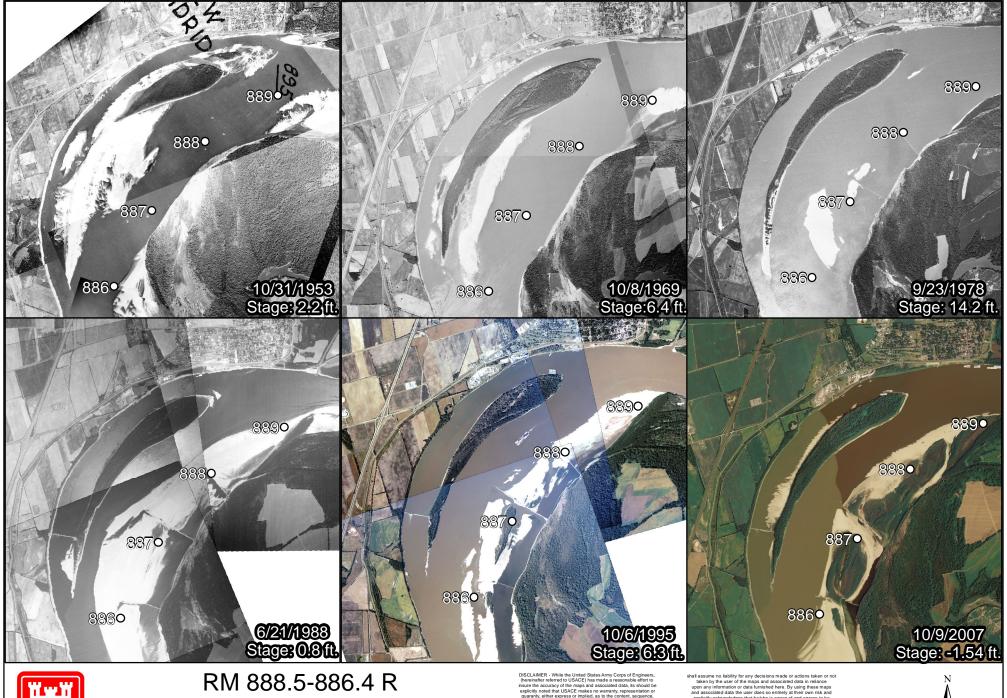






Elevation in feet LWRP 1974







Chute of New Madrid Bar

1:70,000 Distance to gage: 2 river miles

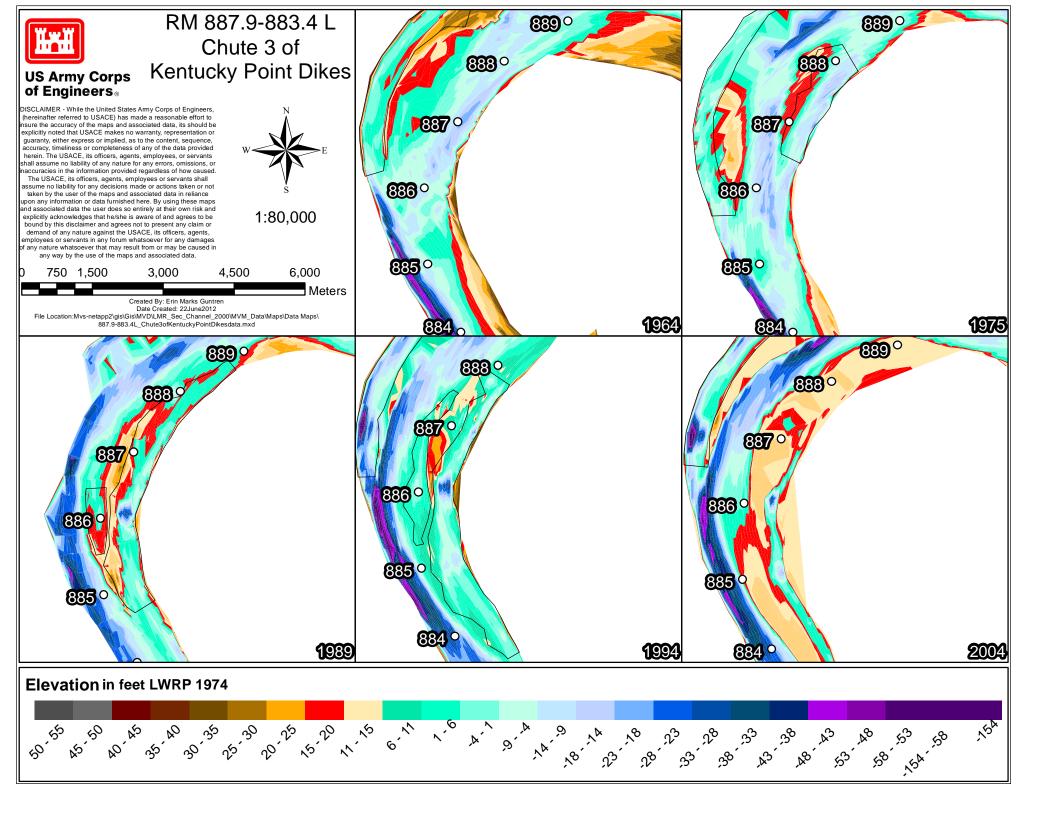
Created by: Erin Marks Guntren

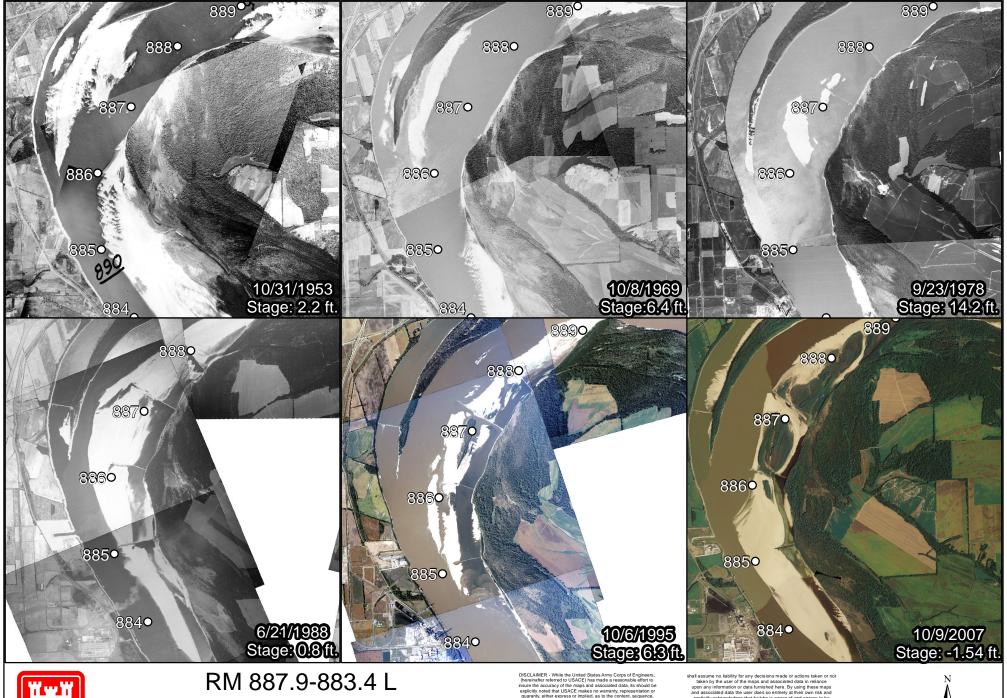
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3,200 1,600 4,800 6,400 Meters







Chute 3 of Kentucky Point Dikes

US Army Corps of Engineers_®

1:80,000

Distance to gage: 3 river miles

Created by: Erin Marks Guntrer Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
887.9-883.4L_Chute3ofKentuckyPointDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be the state of the s

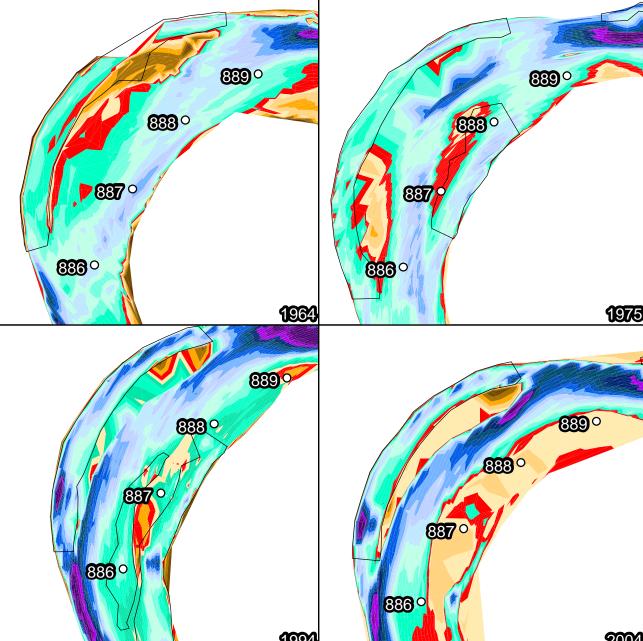
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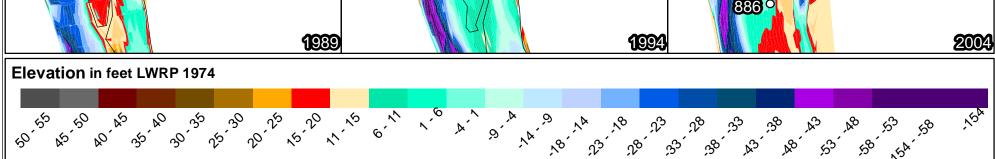


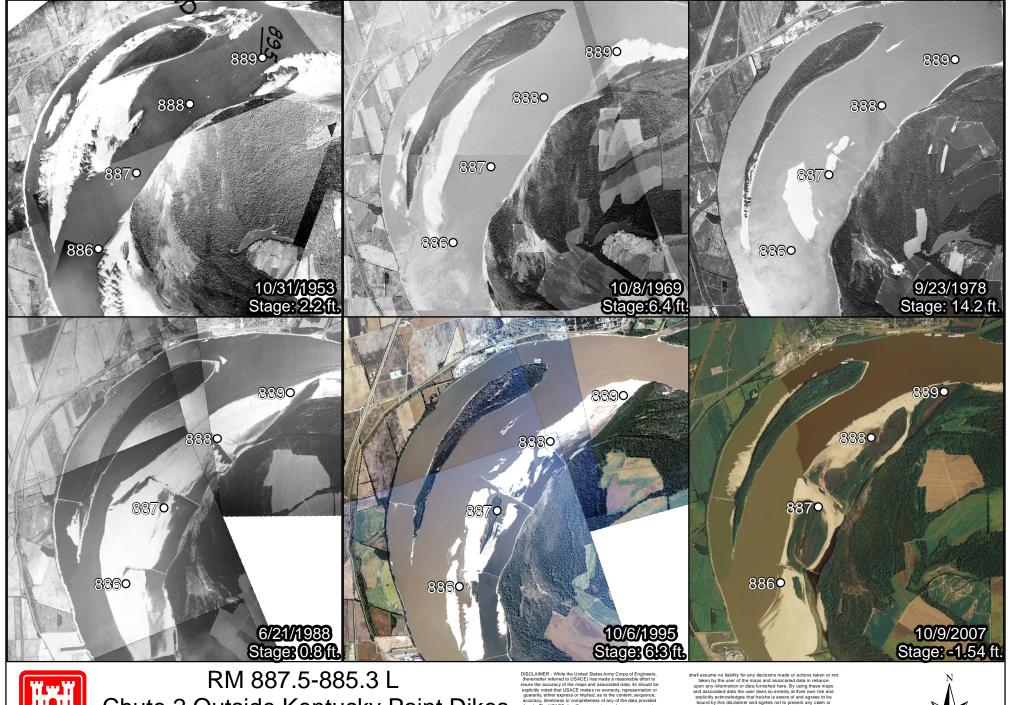
1,800

3,600 5,400 7,200

RM 887.5-885.3 L Chute 2 Outside Kentucky Point Dikes **US Army Corps** of Engineers® DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or 1:70,000 demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 650 1,300 2,600 3,900 5,200 Meters Created By: Erin Marks Guntrer Date Created: 22June2012 File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 887.5-885.3L Chute2OutsideKentuckyPointDikesdata.mxd







US Army Corps of Engineers®

Chute 2 Outside Kentucky Point Dikes

Distance to gage: 3 river miles 1:70,000

Created by: Erin Marks Guntren Date Created: 27June2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 887.5-885.3L_Chute2OutsideKentuckyPointDikesphotos.mxd

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1,600

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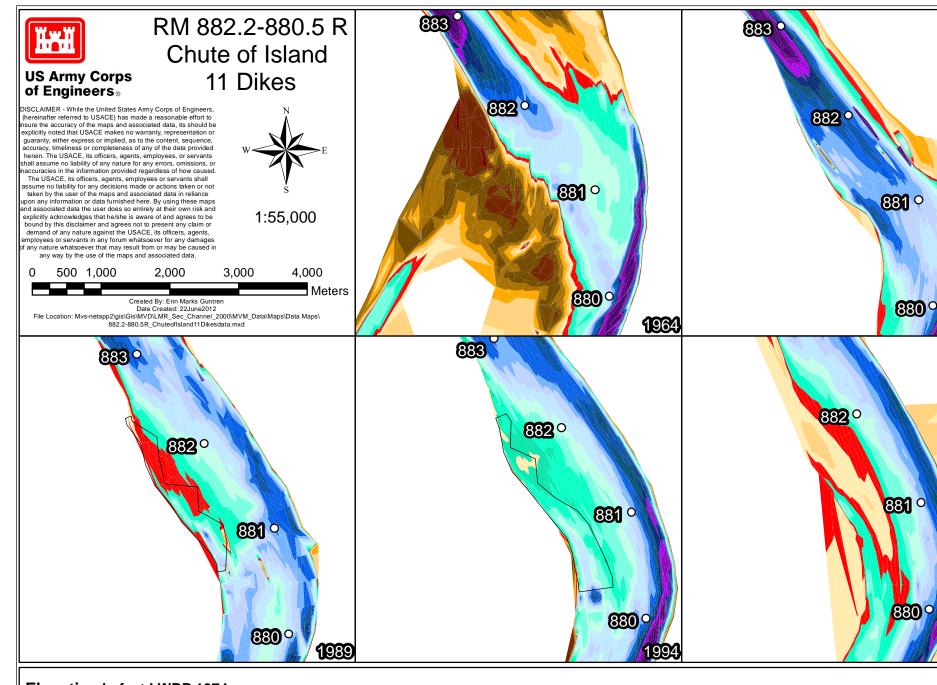
4,800

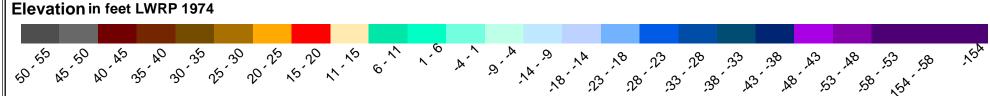
6,400

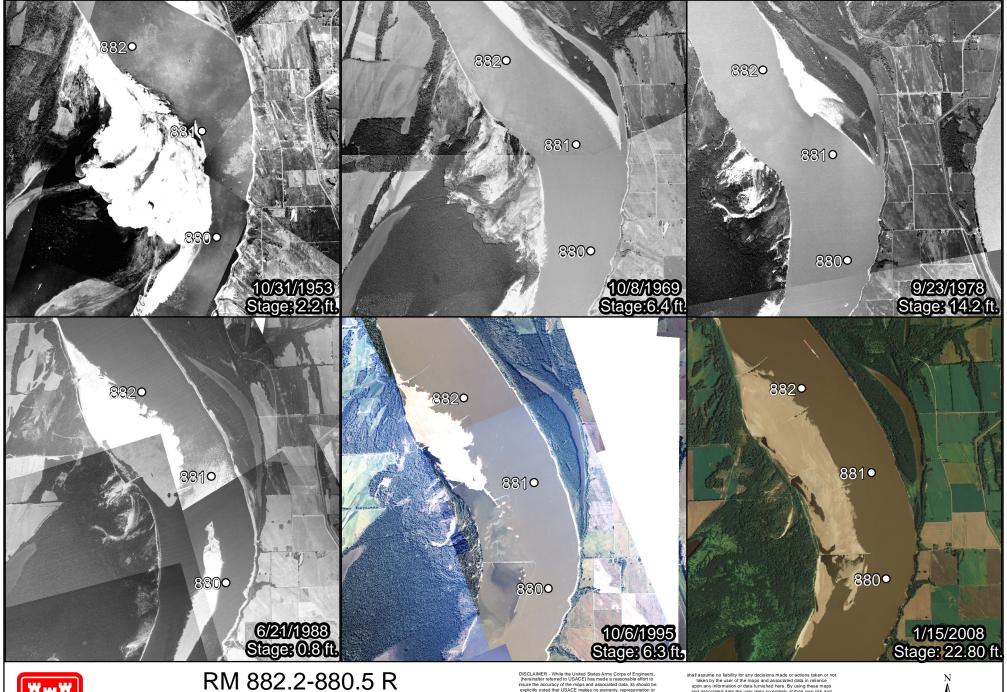
Meters

3,200











RM 882.2-880.5 R Chute of Island 11 Dikes

1:55,000 Distance to gage: 8 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
882.2-880.5R_Chutedflsland11Dikesphotos.mxd

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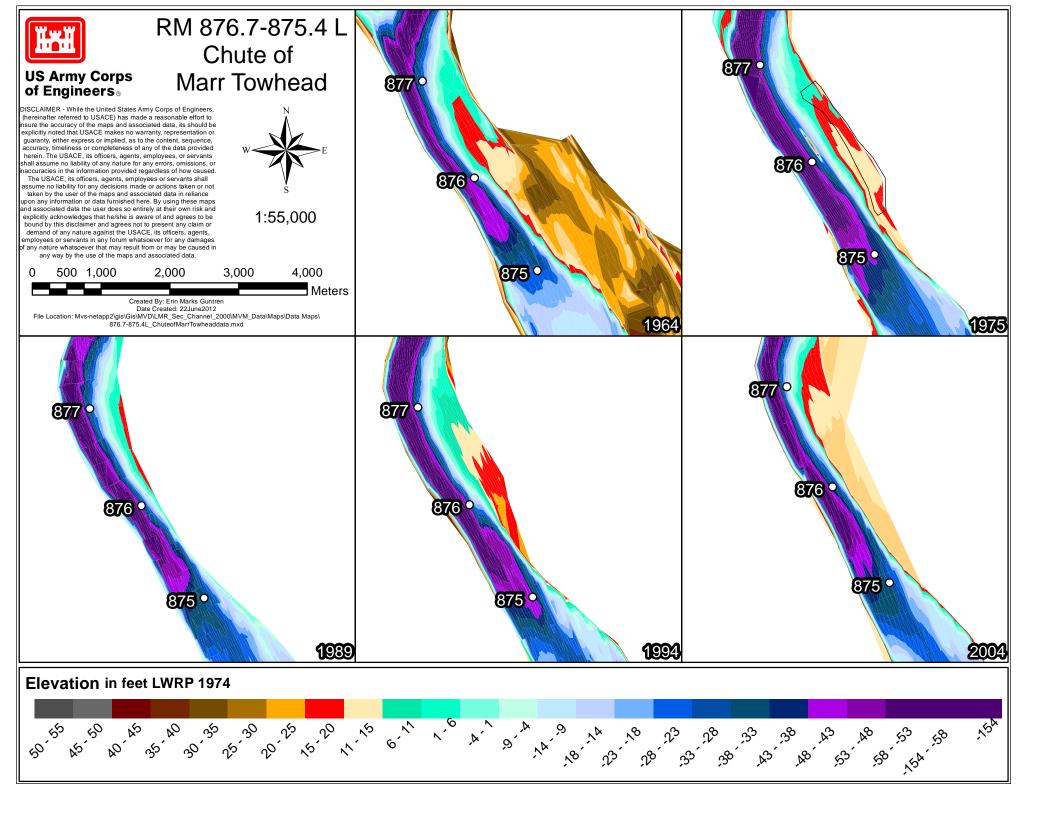
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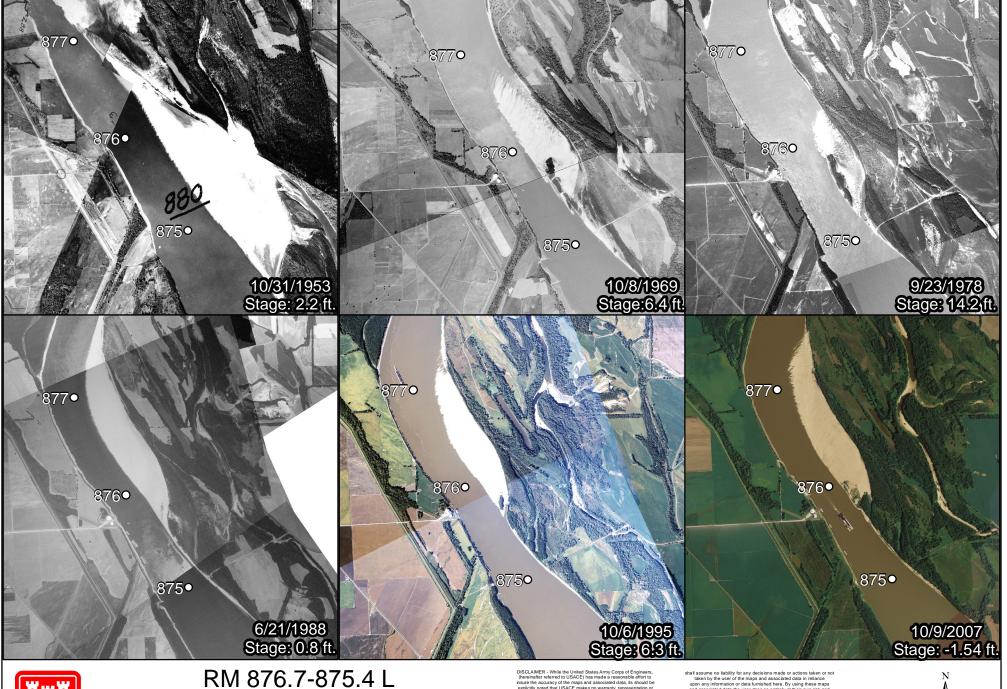


625 1,250

2,500

3,750 5,000







Chute of Marr Towhead

Distance to gage: 13 river miles 1:55,000

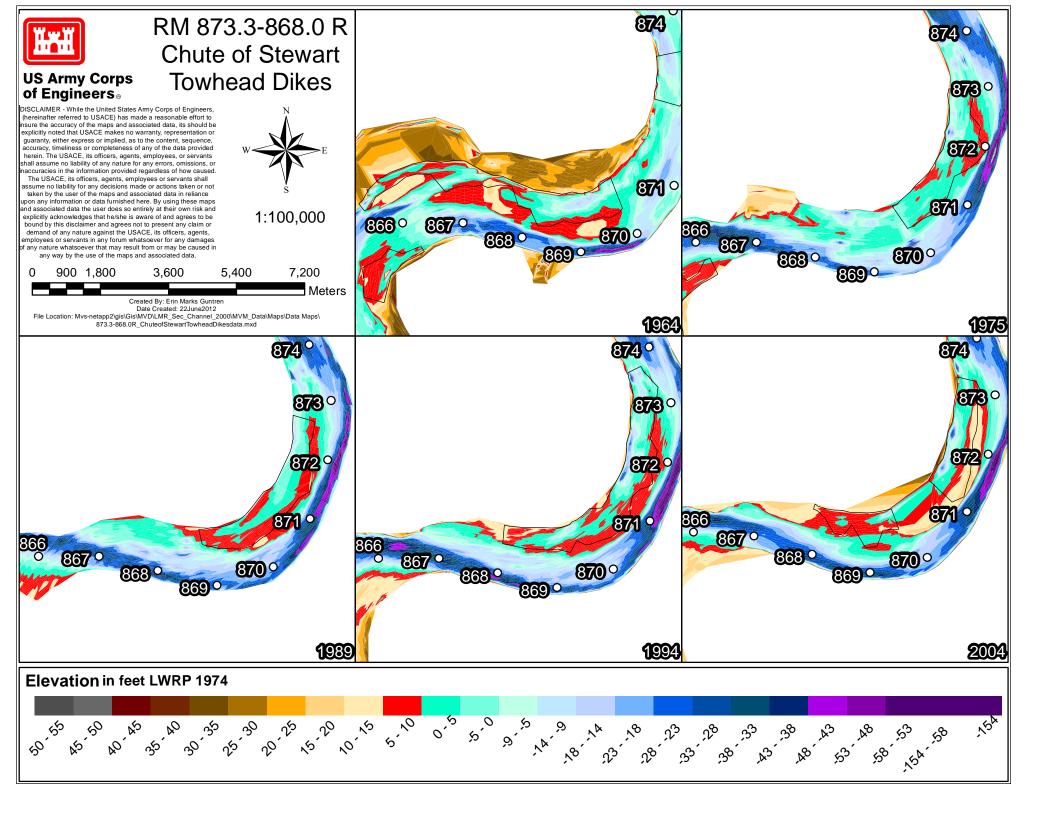
Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
876.7-875.4L_ChuteofMarrTowheadphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

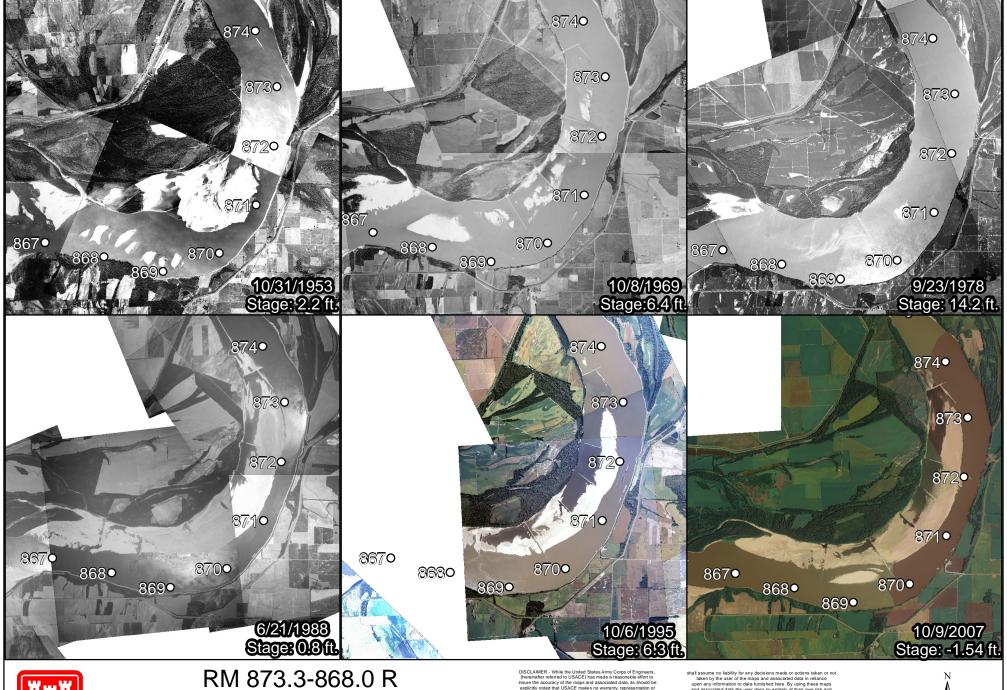
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3,750



1,250 2,500 5,000







RM 873.3-868.0 R Chute of Stewart Towhead Dikes

US Army Corps of Engineers

1:100,000 Distance to gage: 18 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
873.3-868.0R_ChuteofStewartTowheadDikesphotos.mxd

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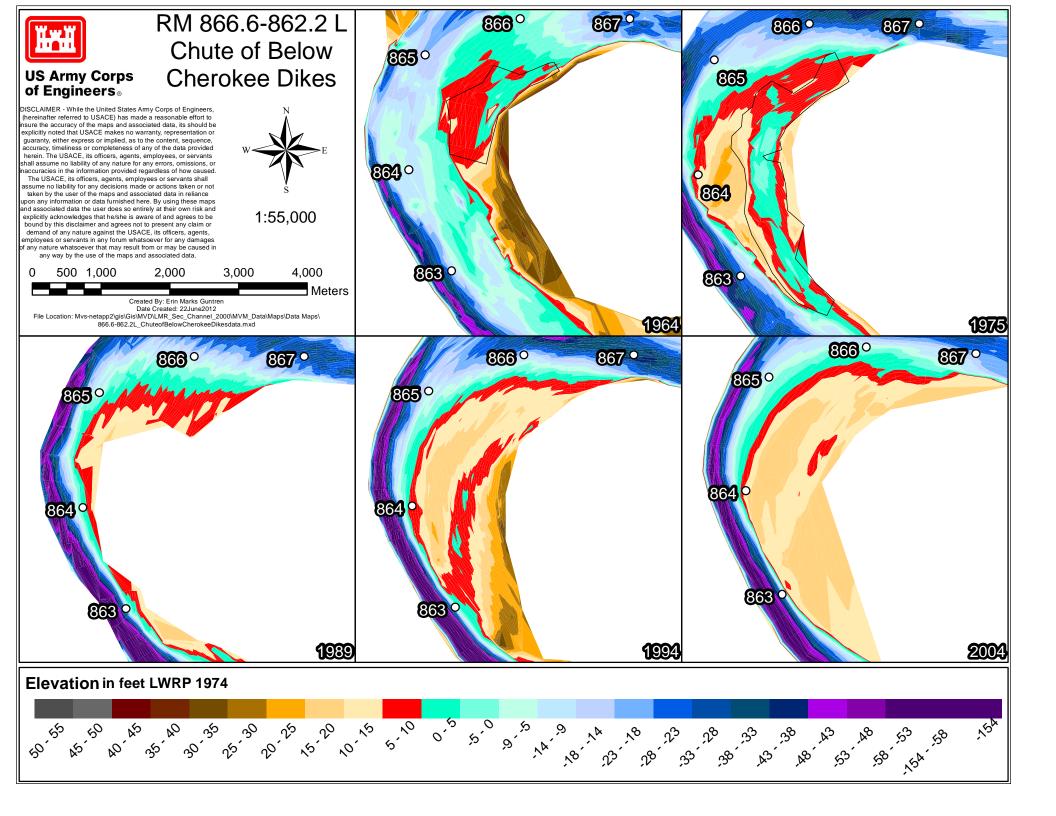


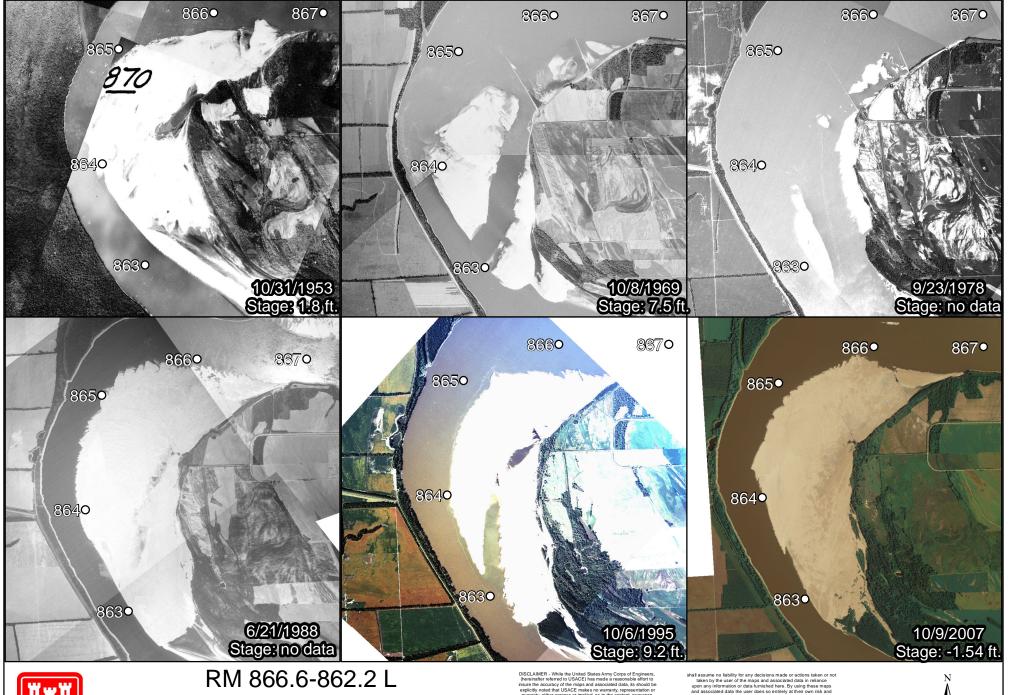
0 1,125 2,250

4,500

6,750

9,000







RM 866.6-862.2 L Chute of Below Cherokee Dikes

US Army Corps of Engineers

1:55,000 Distance to gage: 18 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
866.6-862.21_ChuteofSelowCherokeeDikesphotos.mxd

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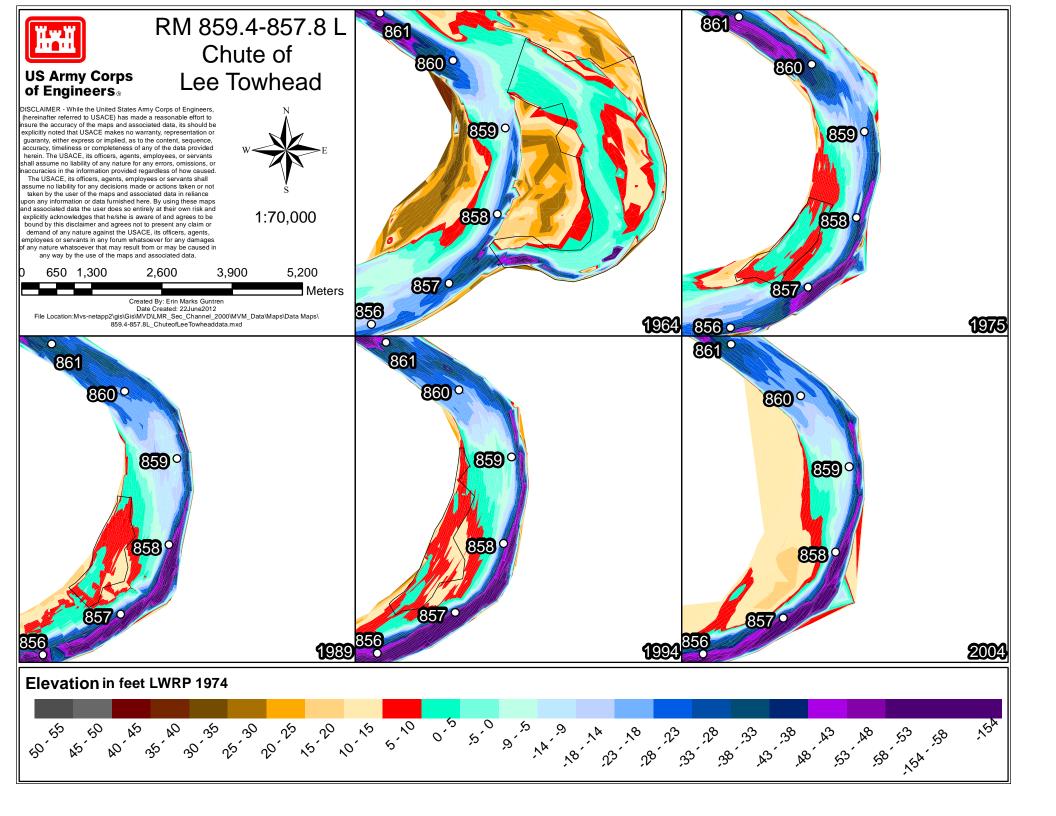
shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data is relained upon any information or data furnhand here. By using these maps of the state o

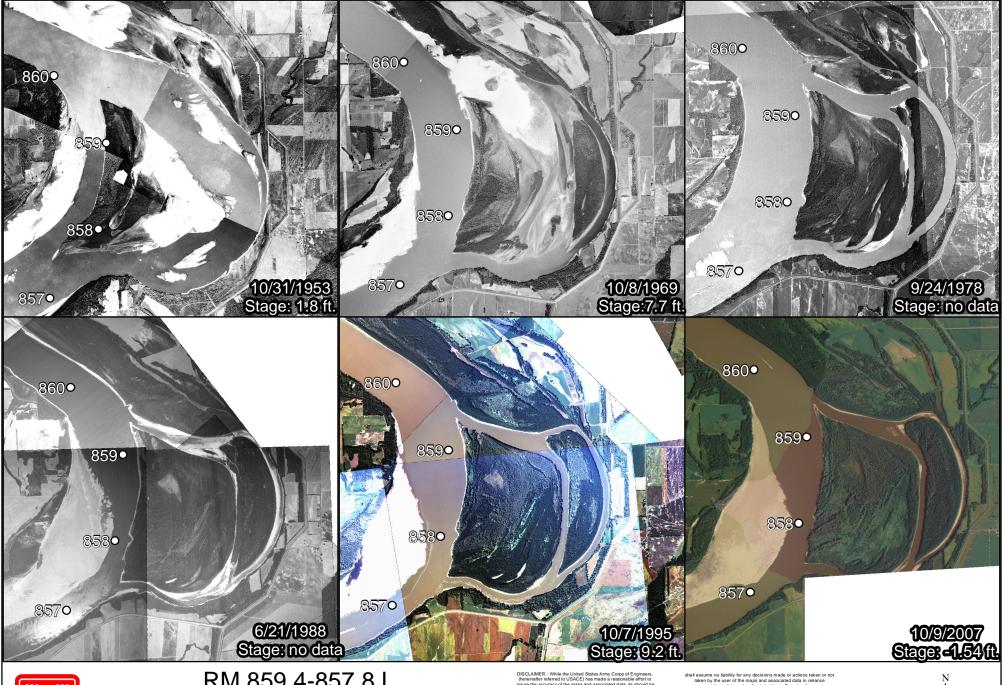


625 1,250

2,500 3,750

5,000







RM 859.4-857.8 L Chute of Lee Towhead

1:70,000 Distance to gage: 12 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
859.4-857.8L_ChuteofLee Towheadphotos.mxd

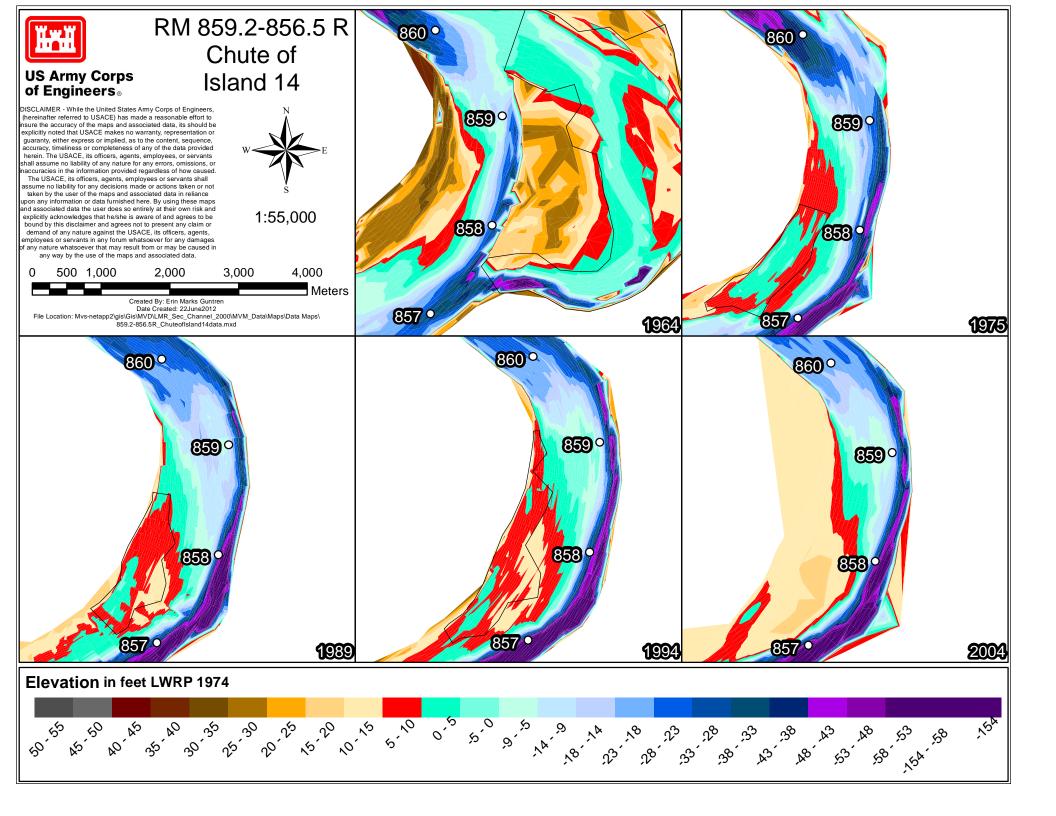
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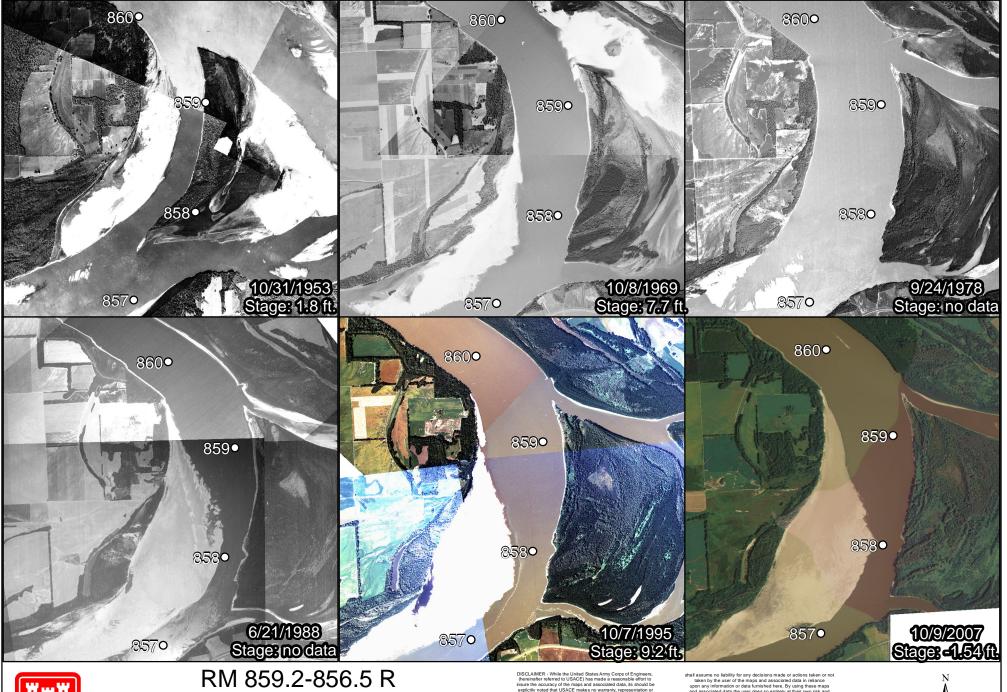


800 1,600

3,200 4,800

6,400







RM 859.2-856.5 R Chute of Island 14

1:55,000 Distance to gage: 11 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
859.2-856.5R_Chuteoflsland14photos.mxd

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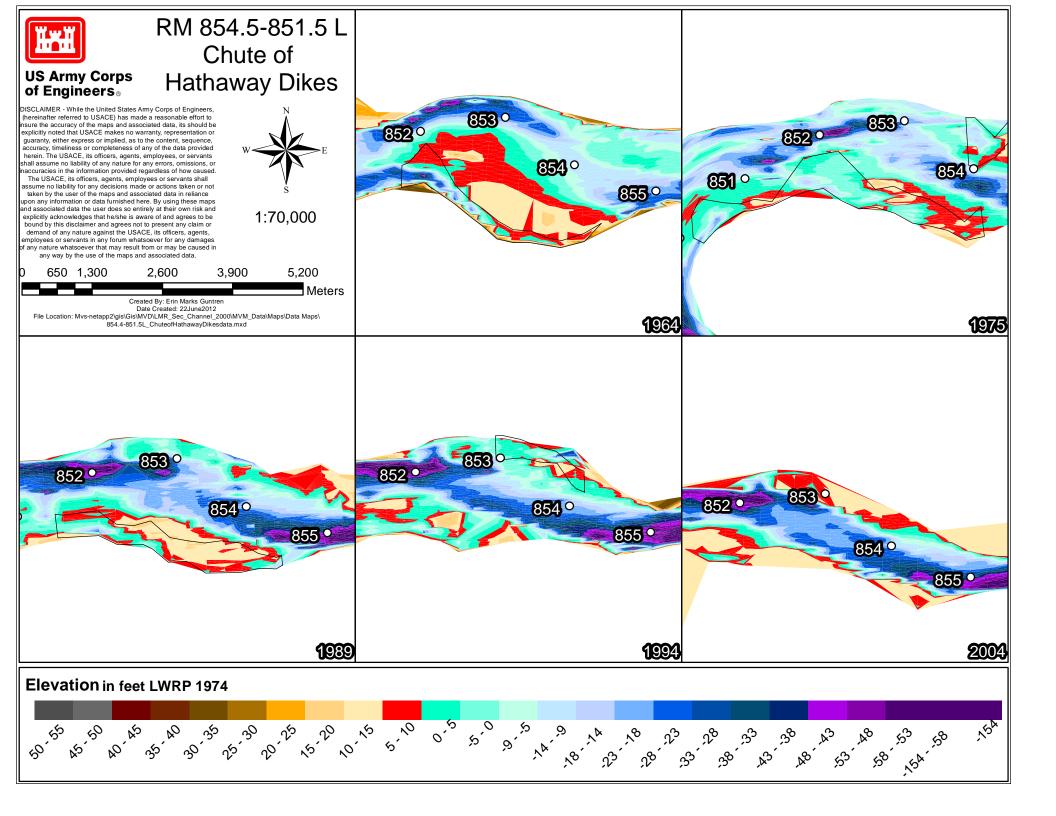


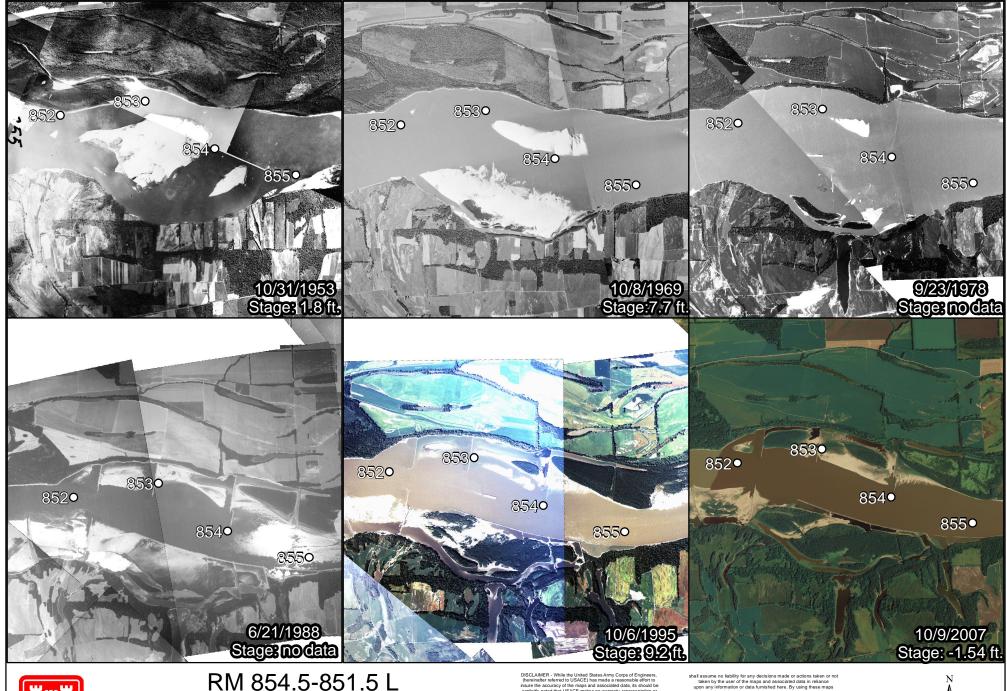
0 625 1,250

2,500

3,750

5,000







RM 854.5-851.5 L Chute of Hathaway Dikes

1:70,000 Distance to gage: 7 river miles

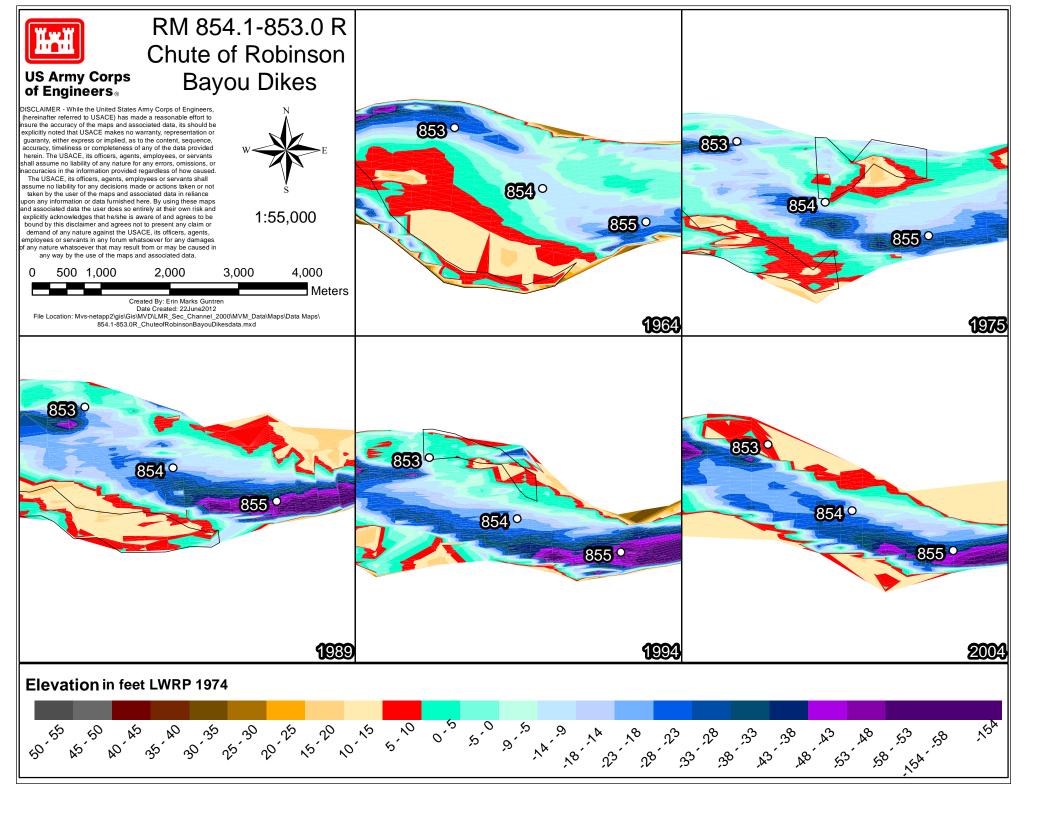
Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
854.5-851.5L_ChuteofHathawayDikesphotos.mxd

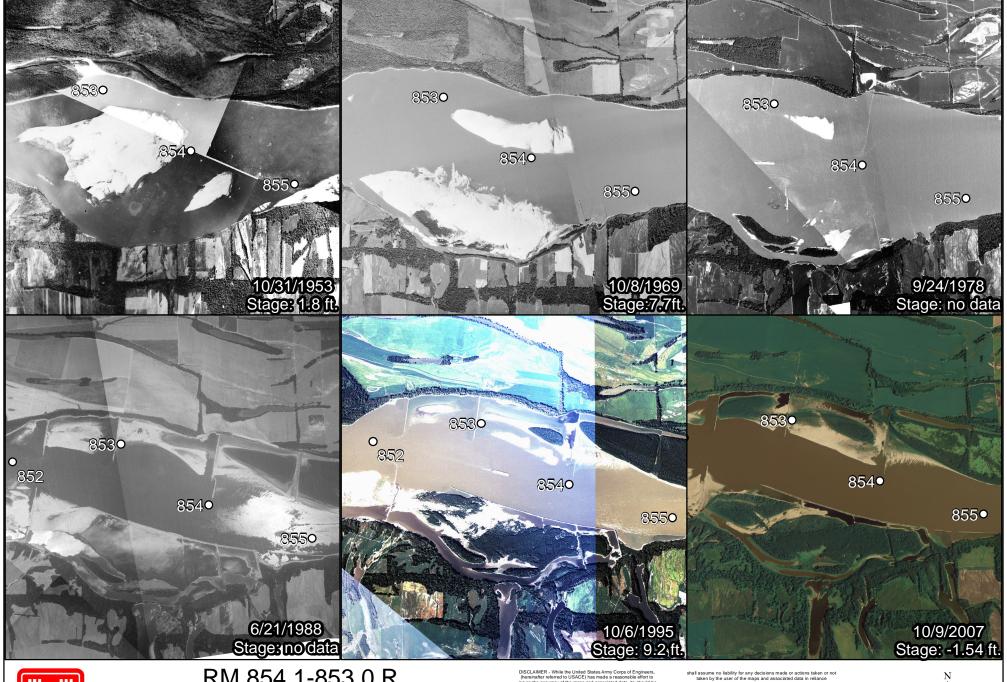
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800 1,600 3,200 4,800 6,400 Meters







RM 854.1-853.0 R Chute of Robinson Bayou Dikes

US Army Corps of Engineers®

1:55,000

Distance to gage: 8 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
854.1-853.0R_ChuteofRobinsonBayouDikesphotos.mxd

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625 1,250

2,500

3,750

5,000

Appendix C: Reach C – River Miles 848–796.5 Memphis District

Seventeen secondary channels were identified in Reach C (see below). Only ten secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table C1. Secondary channels and their upstream river mile for Reach C; channels in bold were included in the Reach Summary.

*** ** **										
Name	River Mile	Name	River Mile	Name	River Mile					
Chute of Blaker Towhead	846.4L	Chute of Island No. 21	828.4L	Chute 2 of Below Tamm Bend Dikes	811.5L					
Chute of Caruthersville/Linwood Bend Dikes	845.9R	Chute of Head of Island 21 Dikes	828.0L	Chute of Nebraska Point Dikes	808.9L					
Chute at Linwood Bend	842.2L	Chute 2 of Wright's Point Dikes	822.0R	Chute of Island 25 Dikes	804.5R					
Chute of Island 18 Towhead Dikes	837.9L	Chute 1 of Wrights Point Dikes	821.5R	Chute of Island No. 27	800.4R					
Chute of Island No. 18	837.4L	Chute 3 Outside Wrights Point Dikes	817.4R	Chute of Forked Deer Dikes	799.9L					
Chute of Island 20 Dikes	831.8R	Chute 1 Outside Below Tamm Bend Dikes	812.0L							

Reach Summary

Table C2. Sum of Reach C area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)	Volume (yds ³)			
	cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	98%	580	1,000	1,490	1,960	12,915,000	36,907,000	
1975	99%	640	1,200	2,290	3,130	13,156,000	49,112,000	
1994	98%	490	1,170	2,320	3,540	10,998,000	48,492,000	
2004	98%	130	390	970	2,040	2,829,000	20,150,000	

Table C3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach C. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Canadani Ohamal	River	Vanu	Cvrg.		Area (/	Acres)	Volume (yd³)		
Secondary Channel	Miles	Year		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Blaker Towhead	846.4- 842.2L	1964	100%	60	140	250	320	1,339,000	5,242,000
Chute of Blaker Towhead	846.4- 842.2L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Blaker Towhead	846.4- 842.2L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Blaker Towhead	846.4- 842.2L	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Blaker Towhead	846.4- 842.2L	2004	100%	100	220	340	460	1,986,000	7,510,000
Chute at Linwood Bend	842.2- 840.5L	1964	90%	0	0	0	0	0	0
Chute at Linwood Bend	842.2- 840.5L	1975	100%	0	0	0	0	0	0
Chute at Linwood Bend	842.2- 840.5L	1989	100%	10	70	180	300	350,000	3,341,000
Chute at Linwood Bend	842.2- 840.5L	1994	100%	100	290	670	800	2,397,000	12,329,000
Chute at Linwood Bend	842.2- 840.5L	2004	100%	80	230	510	750	1,736,000	9,968,000
Chute of Caruthersville/Linwood Bend Dikes	845.9- 841.6R	1964	100%	50	120	200	320	994,000	4,429,000
Chute of Caruthersville/Linwood Bend Dikes	845.9- 841.6R	1975	100%	50	70	110	150	1,007,000	2,770,000
Chute of Caruthersville/Linwood Bend Dikes	845.9- 841.6R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Caruthersville/Linwood Bend Dikes	845.9- 841.6R	1994	100%	0	0	0	0	0	0
Chute of Caruthersville/Linwood Bend Dikes	845.9- 841.6R	2004	100%	0	0	0	0	0	0
Chute of Island 18 Towhead Dikes	837.9- 834.5L	1964	100%	0	0	0	0	0	0
Chute of Island 18 Towhead Dikes	837.9- 834.5L	1975	100%	0	0	0	0	0	0

Casandani Ohannal	River Miles	Year	Cvrg.		Area (A	Acres)	Volume (yd³)		
Secondary Channel				-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Island 18 Towhead Dikes	837.9- 834.5L	1989	100%	190	290	460	610	3,734,000	11,173,000
Chute of Island 18 Towhead Dikes	837.9- 834.5L	1994	100%	100	260	380	530	2,257,000	8,625,000
Chute of Island 18 Towhead Dikes	837.9- 834.5L	2004	100%	0	10	100	350	37,000	2,168,000
Chute of Island No. 18	837.4- 832.2L	1964	100%	190	310	490	610	4,126,000	11,920,000
Chute of Island No. 18	837.4- 832.2L	1975	90%	110	230	430	510	2,210,000	8,791,000
Chute of Island No. 18	837.4- 832.2L	1989	100%	0	0	0	0	0	0
Chute of Island No. 18	837.4- 832.2L	1994	100%	0	0	0	0	0	0
Chute of Island No. 18	837.4- 832.2L	2004	100%	0	0	0	0	0	0
Chute of Island 20 Dikes	831.8- 828.2R	1964	100%	170	250	320	400	4,096,000	9,290,000
Chute of Island 20 Dikes	831.8- 828.2R	1975	100%	60	200	430	620	1,747,000	8,565,000
Chute of Island 20 Dikes	831.8- 828.2R	1989	100%	160	290	560	820	3,515,000	12,559,000
Chute of Island 20 Dikes	831.8- 828.2R	1994	95%	110	200	380	560	2,464,000	8,552,000
Chute of Island 20 Dikes	831.8- 828.2R	2004	90%	0	0	0	0	0	0
Chute of Island No. 21	828.4- 823.4L	1964	90%	180	320	470	620	3,700,000	11,268,000
Chute of Island No. 21	828.4- 823.4L	1975	100%	110	240	520	760	2,481,000	10,729,000
Chute of Island No. 21	828.4- 823.4L	1989	100%	80	140	260	450	1,442,000	5,832,000
Chute of Island No. 21	828.4- 823.4L	1994	85%	70	140	200	270	1,396,000	4,713,000
Chute of Island No. 21	828.4- 823.4L	2004	100%	30	70	180	350	554,000	3,619,000
Chute of Head of Island 21 Dikes	828- 825L	1964	100%	0	0	0	0	0	0
Chute of Head of Island 21 Dikes	828- 825L	1975	100%	0	0	0	0	0	0
Chute of Head of Island 21 Dikes	828- 825L	1989	100%	10	30	70	120	167,000	1,356,000

Secondary Channel	River Miles	Year	Cvrg.		Area (/	Acres)	Volume (yd³)		
Secondary Channel				-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Head of Island 21 Dikes	828- 825L	1994	100%	20	50	110	260	491,000	2,457,000
Chute of Head of Island 21 Dikes	828- 825L	2004	100%	0	0	0	0	0	0
Chute 2 of Wright's Point Dikes	822- 815R	1964	100%	20	130	300	410	637,000	5,276,000
Chute 2 of Wright's Point Dikes	822- 815R	1975	100%	400	590	920	1,210	9,940,000	24,688,000
Chute 2 of Wright's Point Dikes	822- 815R	1989	100%	130	400	700	890	2,411,000	13,327,000
Chute 2 of Wright's Point Dikes	822- 815R	1994	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Wright's Point Dikes	822- 815R	2004	100%	10	70	220	540	381,000	4,360,000
Chute 1 of Wrights Point Dikes	821.5- 820.9R	1964	100%	150	200	250	310	3,252,000	7,293,000
Chute 1 of Wrights Point Dikes	821.5- 820.9R	1975	100%	0	10	50	60	56,000	740,000
Chute 1 of Wrights Point Dikes	821.5- 820.9R	1989	100%	0	10	50	90	25,000	883,000
Chute 1 of Wrights Point Dikes	821.5- 820.9R	1994	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Wrights Point Dikes	821.5- 820.9R	2004	100%	822.0 R	822.0 R	822.0 R	822.0 R	822.0R	822.0R
Chute 3 Outside Wrights Point Dikes	817.4- 816.2R	1964	100%	0	0	0	0	0	0
Chute 3 Outside Wrights Point Dikes	817.4- 816.2R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 3 Outside Wrights Point Dikes	817.4- 816.2R	1989	100%	0	20	60	110	71,000	1,094,000
Chute 3 Outside Wrights Point Dikes	817.4- 816.2R	1994	100%	0	0	10	70	0	281,000
Chute 3 Outside Wrights Point Dikes	817.4- 816.2R	2004	100%	0	0	0	0	0	0
Chute 1 Outside Below Tamm Bend Dikes	812- 811.5L	1964	100%	0	0	0	0	0	0
Chute 1 Outside Below Tamm Bend Dikes	812- 811.5L	1975	100%	10	20	170	350	146,000	2,836,000
Chute 1 Outside Below Tamm Bend Dikes	812- 811.5L	1989	100%	0	0	0	0	0	0
Chute 1 Outside Below Tamm Bend Dikes	812- 811.5L	1994	100%	0	0	0	20	0	29,000

Casandani Ohannal	River	Year	Cvrg.		Area (/	Acres)	Volume (yd³)		
Secondary Channel	Miles			-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 1 Outside Below Tamm Bend Dikes	812- 811.5L	2004	100%	0	0	0	0	0	0
Chute 2 of Below Tamm Bend Dikes	811.5- 809.9L	1964	100%	0	0	0	0	0	0
Chute 2 of Below Tamm Bend Dikes	811.5- 809.9L	1975	100%	0	0	0	0	0	0
Chute 2 of Below Tamm Bend Dikes	811.5- 809.9L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Below Tamm Bend Dikes	811.5- 809.9L	1994	70%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Below Tamm Bend Dikes	811.5- 809.9L	2004	70%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Nebraska Point Dikes	808.9- 806.2L	1964	100%	0	0	0	0	0	0
Chute of Nebraska Point Dikes	808.9- 806.2L	1975	100%	210	270	330	380	3,983,000	9,281,000
Chute of Nebraska Point Dikes	808.9- 806.2L	1989	100%	40	110	330	520	1,032,000	6,215,000
Chute of Nebraska Point Dikes	808.9- 806.2L	1994	100%	70	150	280	580	1,462,000	6,530,000
Chute of Nebraska Point Dikes	808.9- 806.2L	2004	85%	20	50	90	230	332,000	2,115,000
Chute of Island 25 Dikes	804.5- 801.4R	1964	100%	0	0	0	0	0	0
Chute of Island 25 Dikes	804.5- 801.4R	1975	100%	100	170	300	350	1,581,000	6,141,000
Chute of Island 25 Dikes	804.5- 801.4R	1989	100%	0	20	190	280	32,000	2,870,000
Chute of Island 25 Dikes	804.5- 801.4R	1994	100%	20	80	300	520	531,000	5,258,000
Chute of Island 25 Dikes	804.5- 801.4R	2004	100%	10	20	100	350	170,000	2,279,000
Chute of Island No. 27	800.4- 796.6R	1964	80%	80	140	190	240	1,514,000	4,591,000
Chute of Island No. 27	800.4- 796.6R	1975	0%	no bath	no bath	no bath	no bath	no bath	no bath
Chute of Island No. 27	800.4- 796.6R	1989	0%	no bath	no bath	no bath	no bath	no bath	no bath
Chute of Island No. 27	800.4- 796.6R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island No. 27	800.4- 796.6R	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Secondary Channel	River	Year	Cvrg.	Area (Acres)				Volume (yd ³)	
Secondary Charmer	Miles	leai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Forked Deer Dikes	799.9- 796.8L	1964	100%	50	80	120	170	992,000	2,982,000
Chute of Forked Deer Dikes	799.9- 796.8L	1975	100%	0	20	70	110	83,000	1,143,000
Chute of Forked Deer Dikes	799.9- 796.8L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Forked Deer Dikes	799.9- 796.8L	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Forked Deer Dikes	799.9- 796.8L	2004	100%	20	70	190	310	594,000	3,559,000

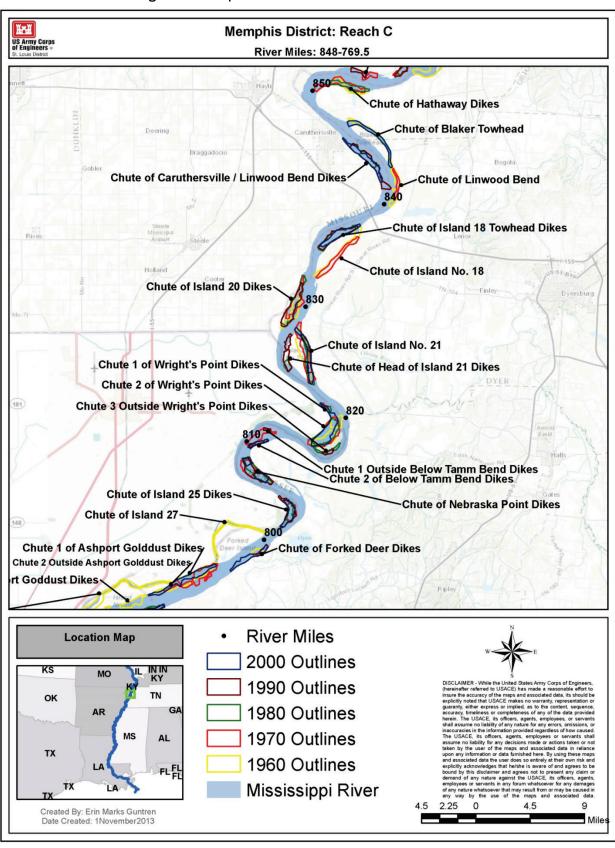
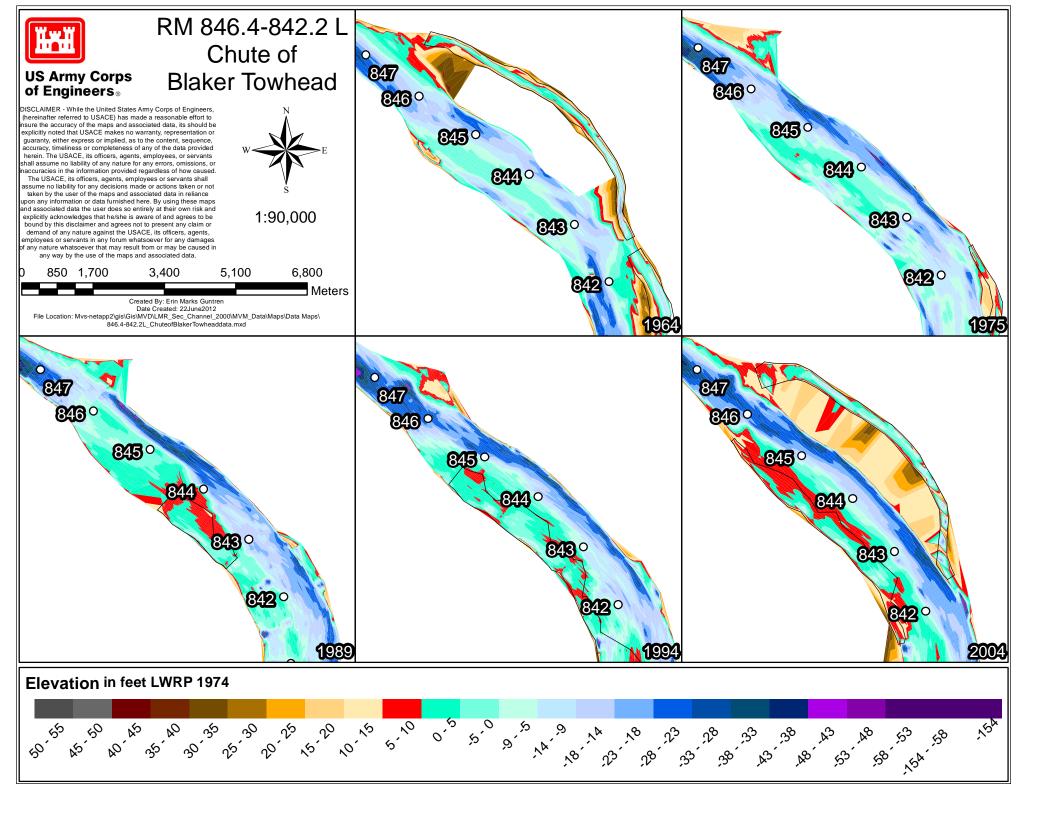
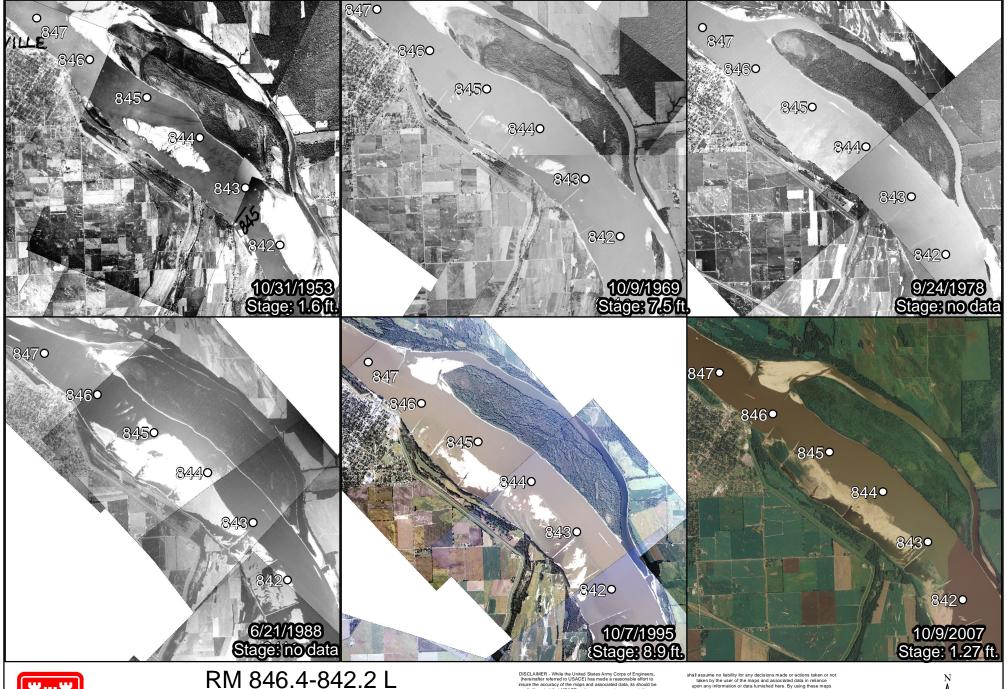


Figure C1. Memphis District Reach C river miles 848–796.5.







RM 846.4-842.2 L Chute of Blaker Towhead

1:90,000 Distance to gage: 2 river miles

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Date Created: 27June2012
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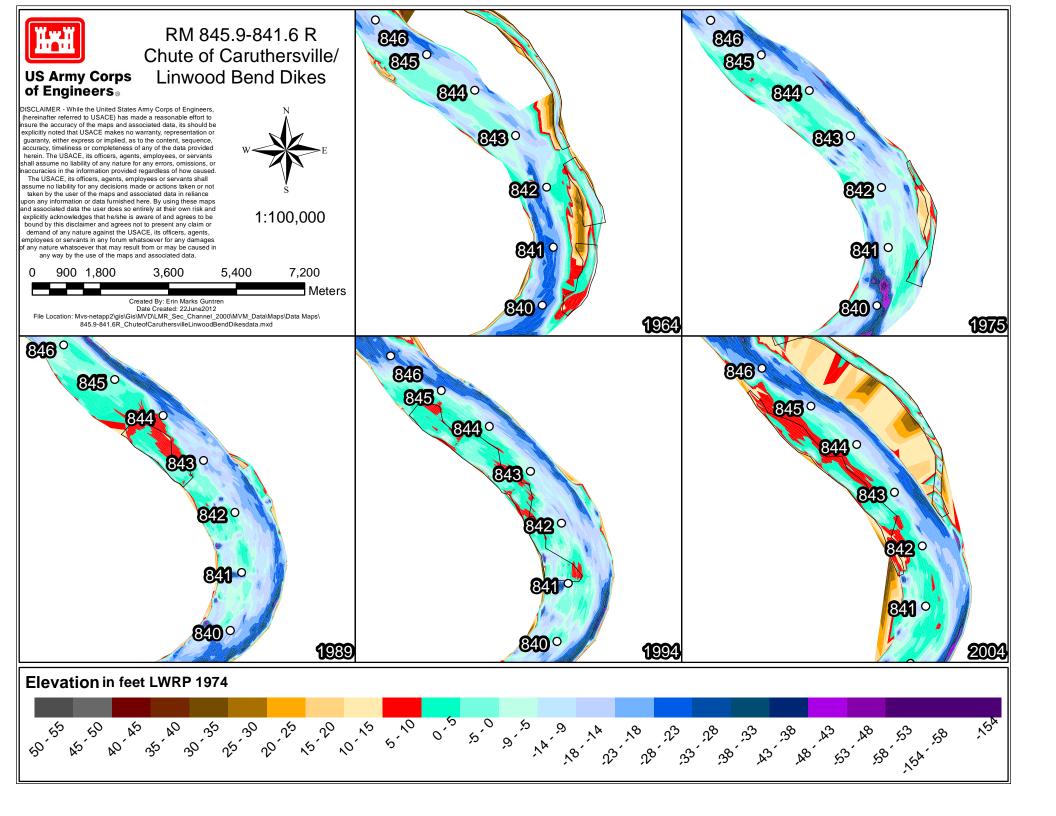


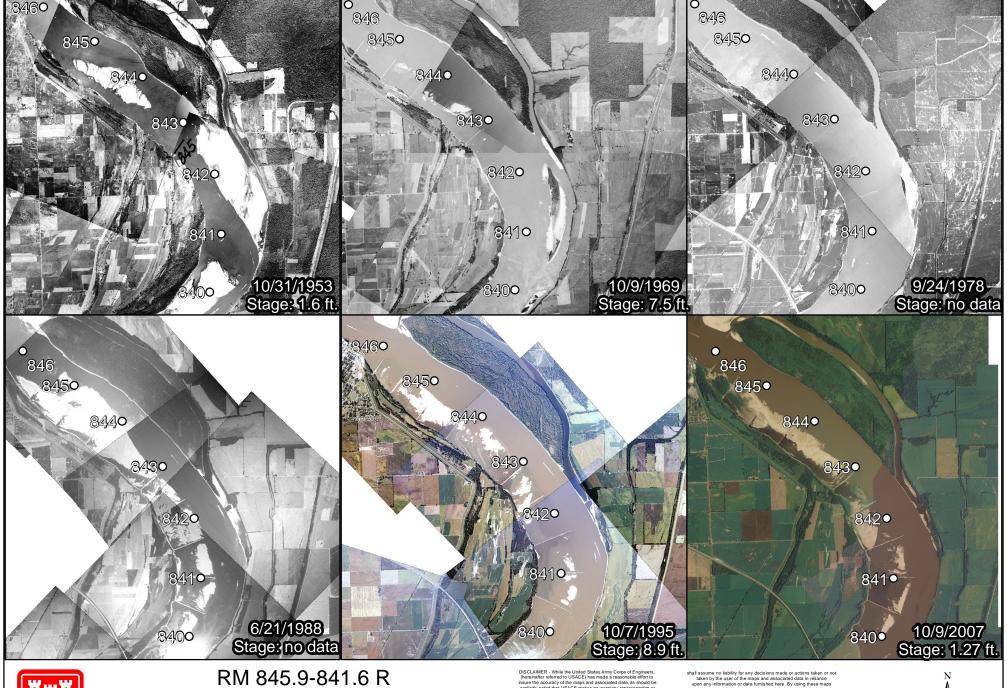
1,000 2,000

4,000

6,000

8,000







RM 845.9-841.6 R Chute of Caruthersville/Linwood Bend Dikes Chute of Caruthersville/Linwood Bend Dikes

US Army Corps of Engineers Created by: Erin Marks Guntren

1:100,000 Distance to gage: 5 river miles

Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR Sec Channel 2000\MVM Data\Maps\Data Maps\ 845.9-841.6R_ChuteofCaruthersvilleLInwoodBendDikesphotos.mxd

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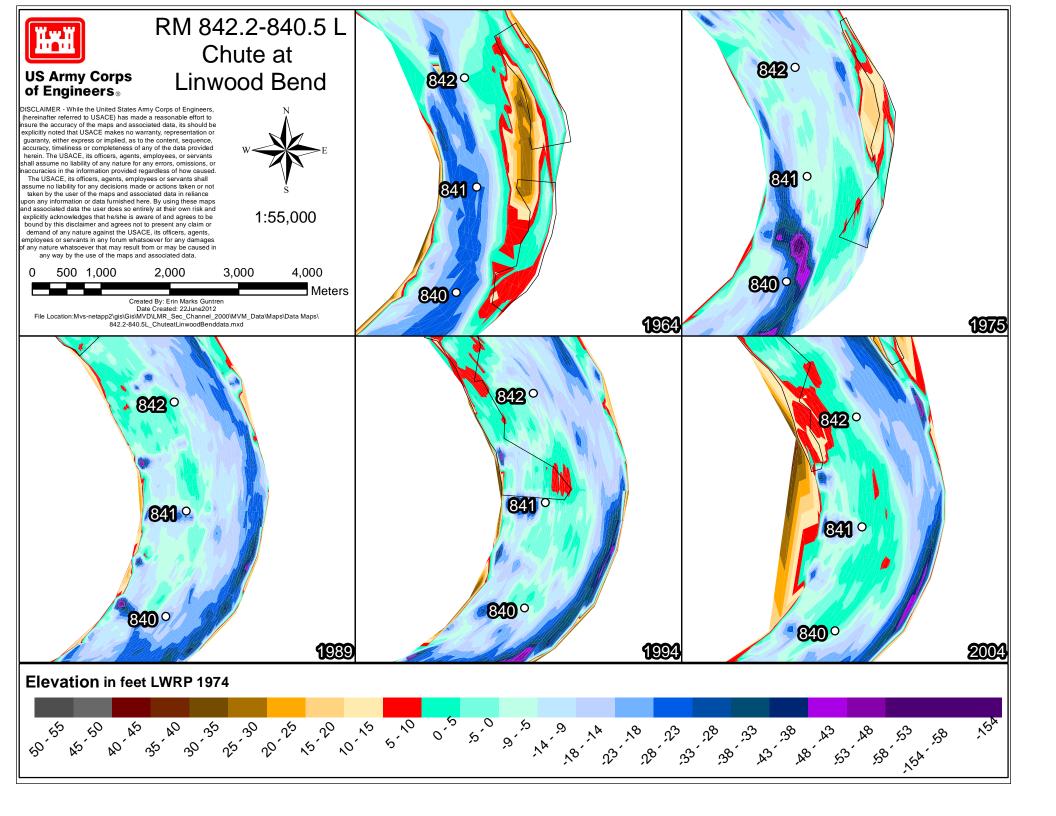
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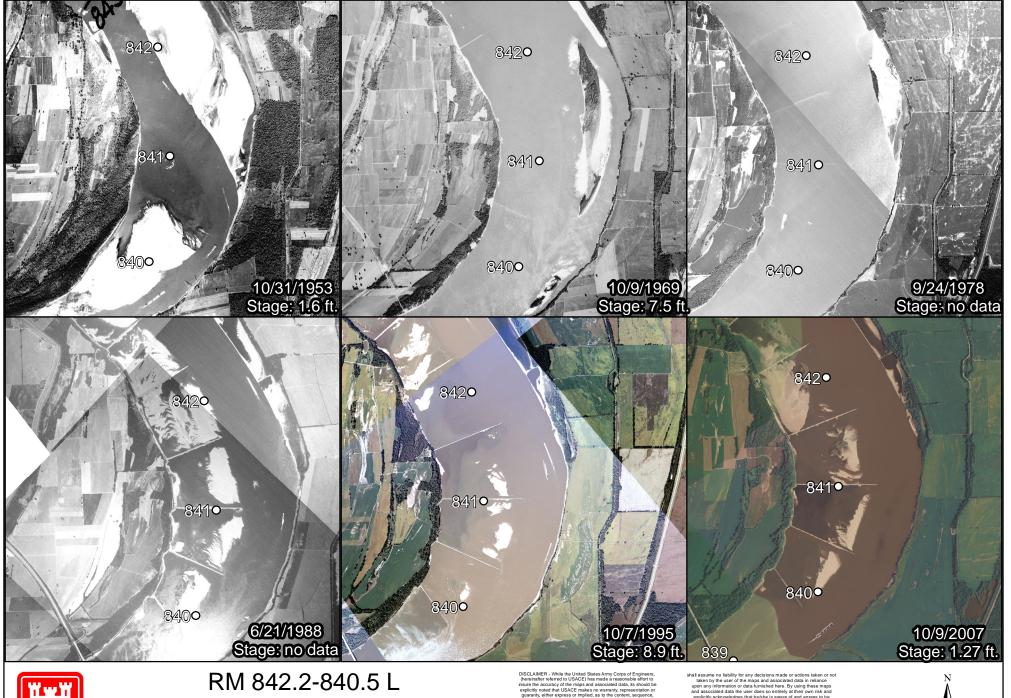


1,100 2,200

4,400

8,800







Chute at Linwood Bend

1:55,000 Distance to gage: 4 river miles

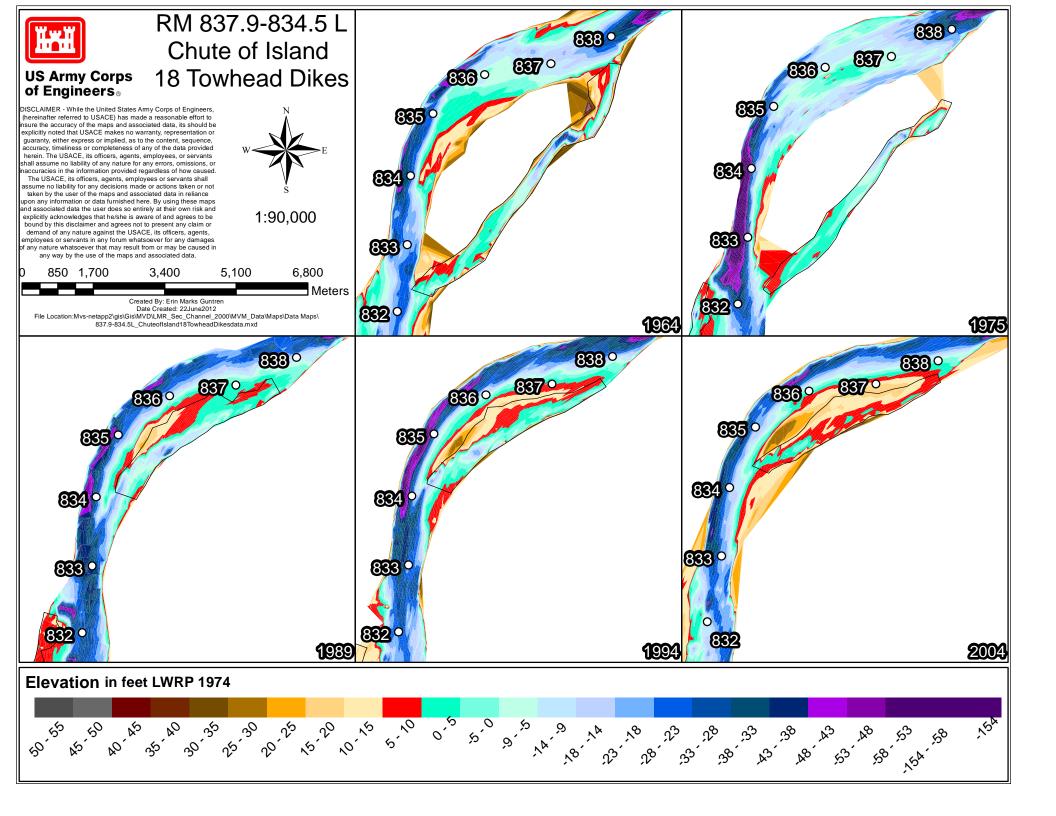
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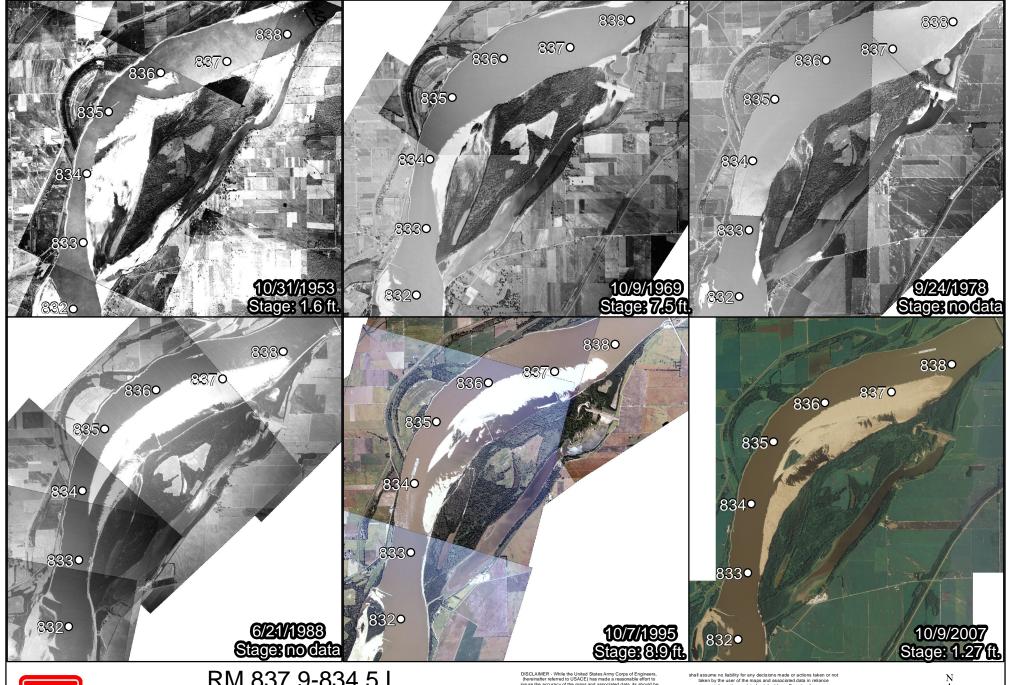
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3,750



1,250 2,500 5,000







RM 837.9-834.5 L Chute of Island 18 Towhead Dikes

1:90,000 Distance to gage: 10 river miles

Created by: Erin Marks Guntren

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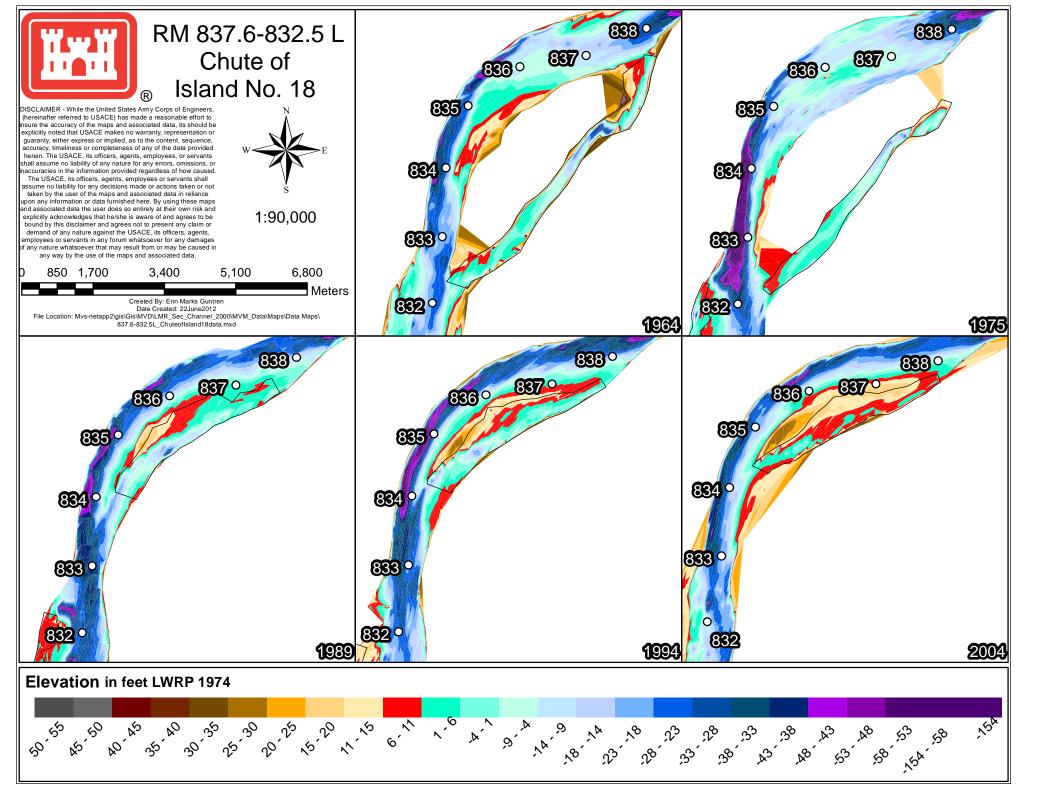


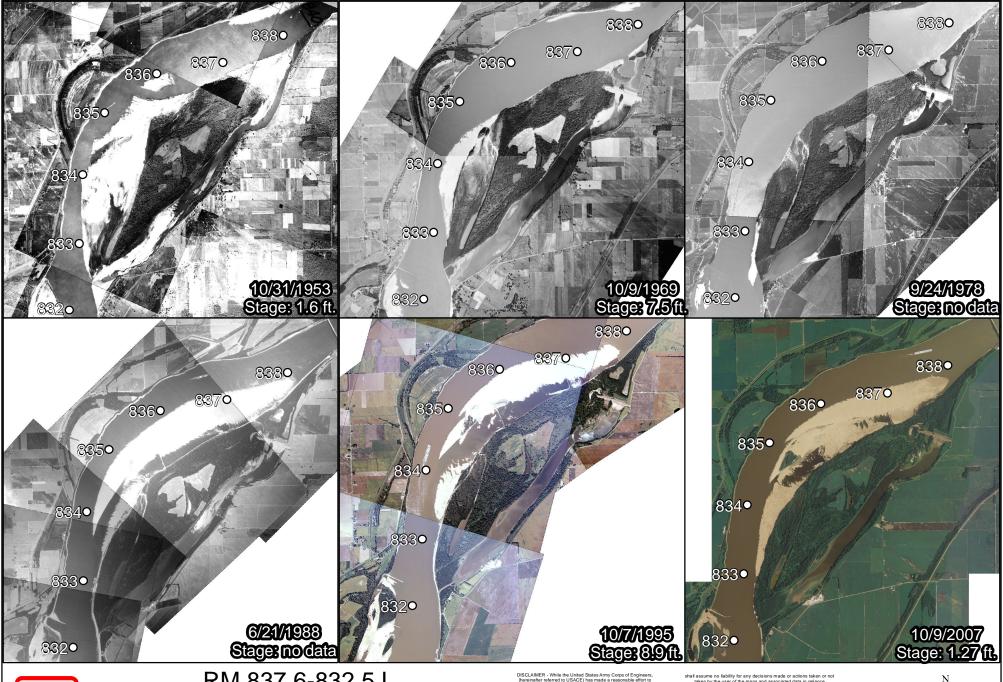
1,000 2,000

4,000

6,000

8,000







RM 837.6-832.5 L Chute of Island No. 18

1:90,000 Distance to gage: 10 river miles

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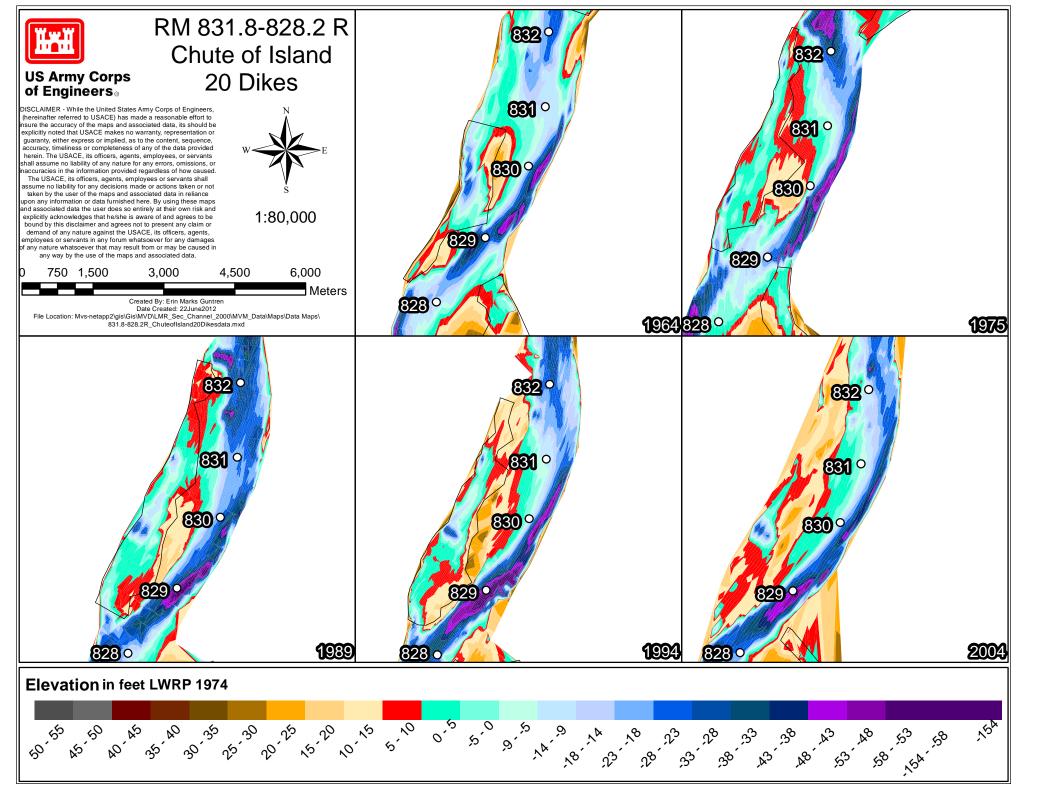
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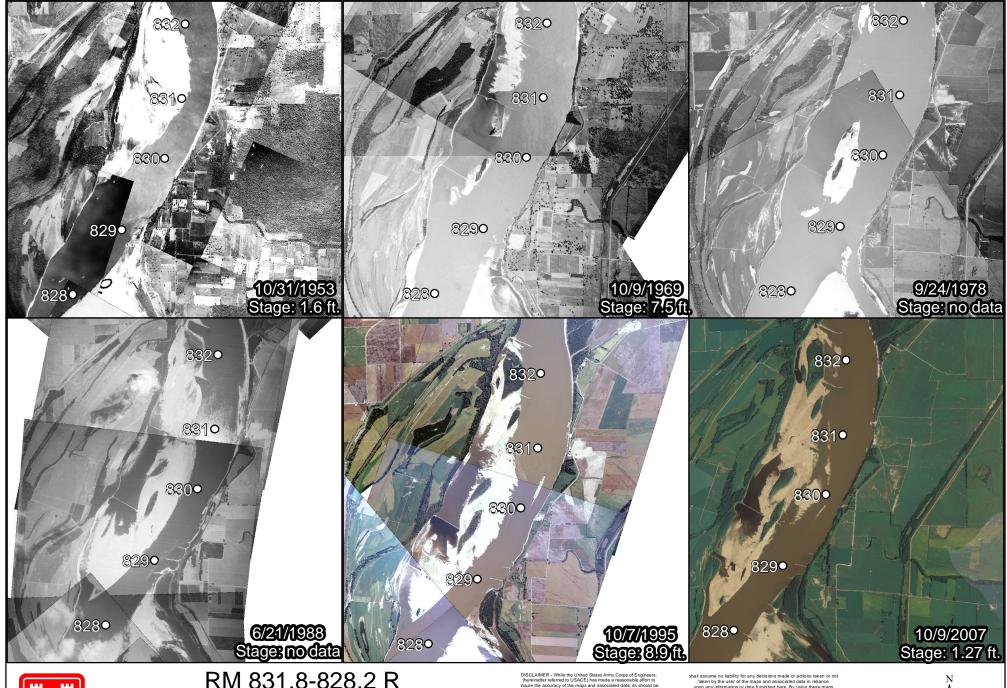


1,000 2,000

4,000

8,000







RM 831.8-828.2 R Chute of Island 20 Dikes

1:80,000 Distance to gage: 16 river miles

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1,800

3,600

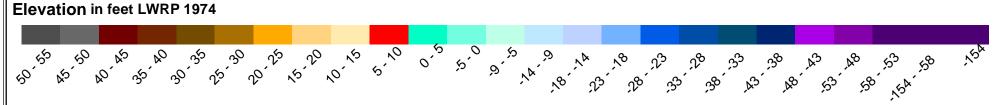
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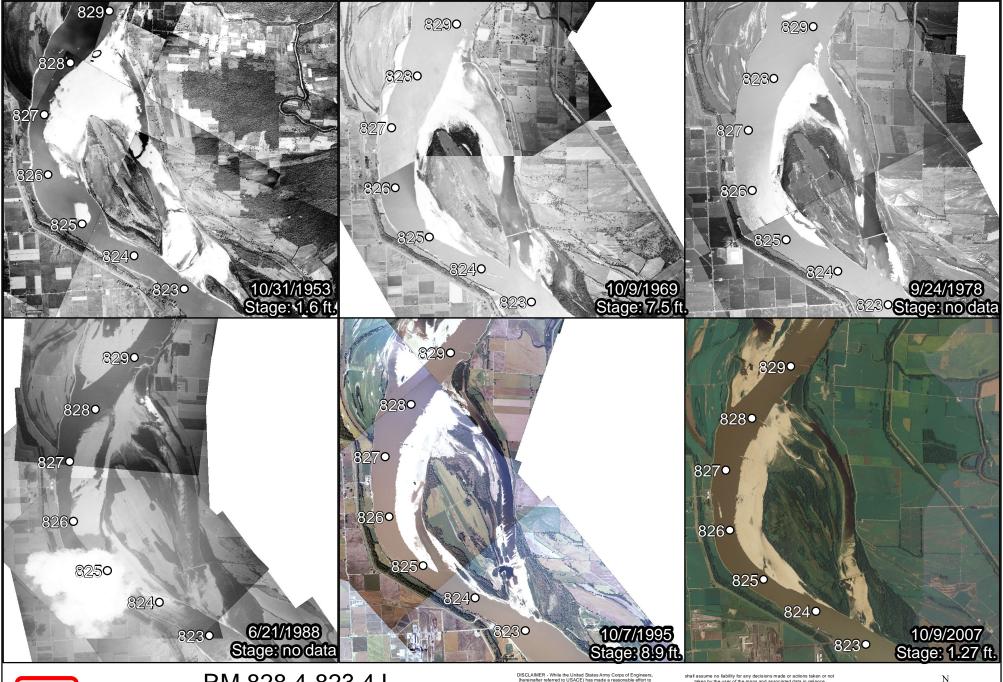
7,200

RM 828.4-823.4 L 8290 Chute of US Army Corps of Engineers Island No. 21 828° DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 826 1:100,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages 825° f any nature whatsoever that may result from or may be caused in 825° any way by the use of the maps and associated data. 900 1,800 3,600 5,400 7,200 Meters Created By: Erin Marks Date Created:22June2012 File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 1964 828.4-823.4L_ChuteofIslandNo21data.mxd 823 ° 1994 1989

1975

2004







RM 828.4-823.4 L Chute of Island No. 21

1:100,000 Distance to gage: 20 river miles

Cleated by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
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0 1,125 2,250

4,500

6,750

9,000

US Army Corps of Engineers

RM 828.0-825.0 L Chute of Head of Island 21 Dikes

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8280

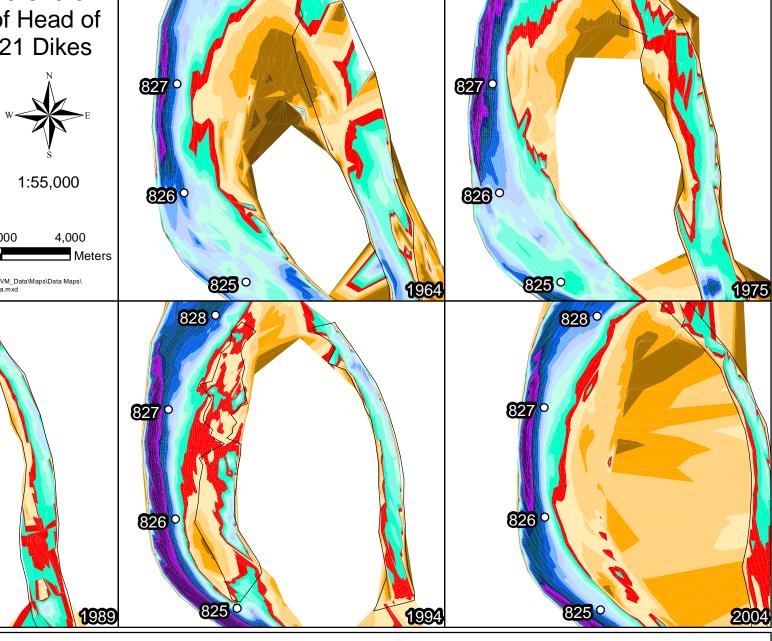


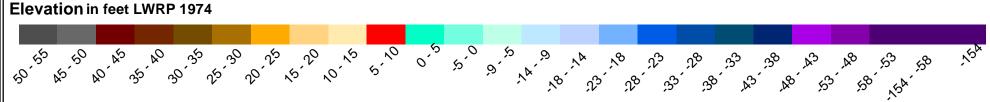
828°

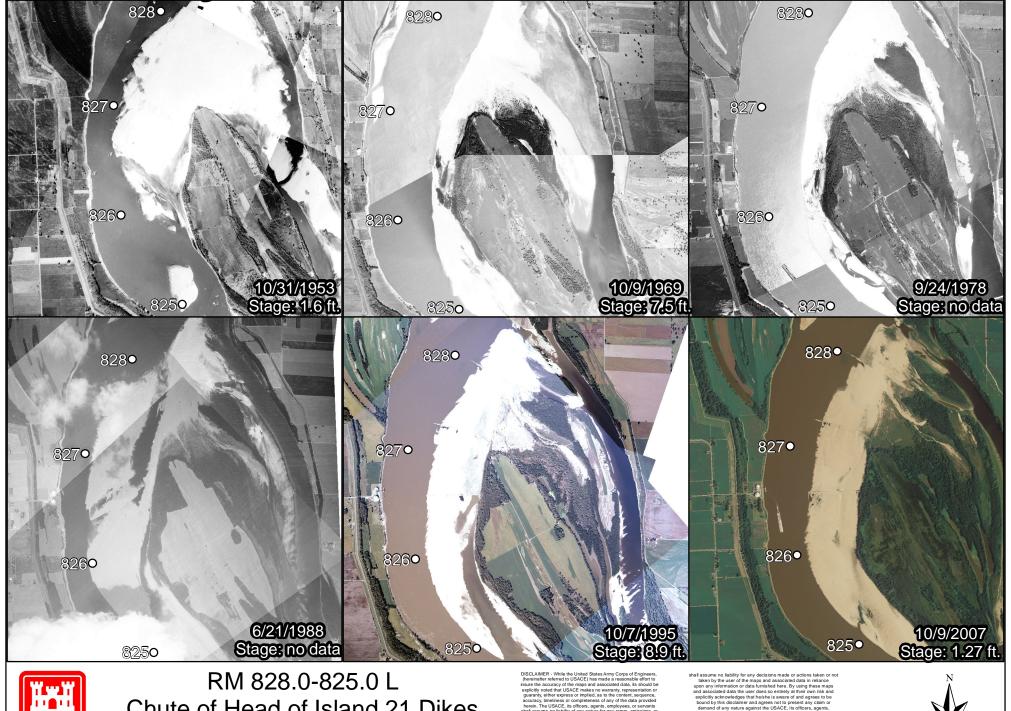
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Created By: Erin Marks Guntrer

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Chute of Head of Island 21 Dikes

1:55,000 Distance to gage: 20 river miles

Created by: Erin Marks Guntren DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

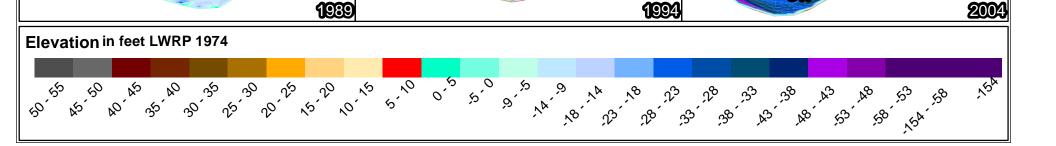
shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in relaince, upon any information or data lumbed heter. By using these maps expended to the state of th



1,250

2,500 3,750 5,000

821° RM 822.0-815.0 R Chute 2 of Wright's Point Dikes **US Army Corps** of Engineers® DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided 819° herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:80,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or 818 815 demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages of any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 750 1,500 3,000 4,500 6,000 8160 817° 816° Meters Created By: Erin Marks Guntrer Date Created: 22June2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 1964 822.0-815.0R Chute2ofWrightsPointDikesdata.mxd 820 819 814 818 815



816°

817

821

820

818

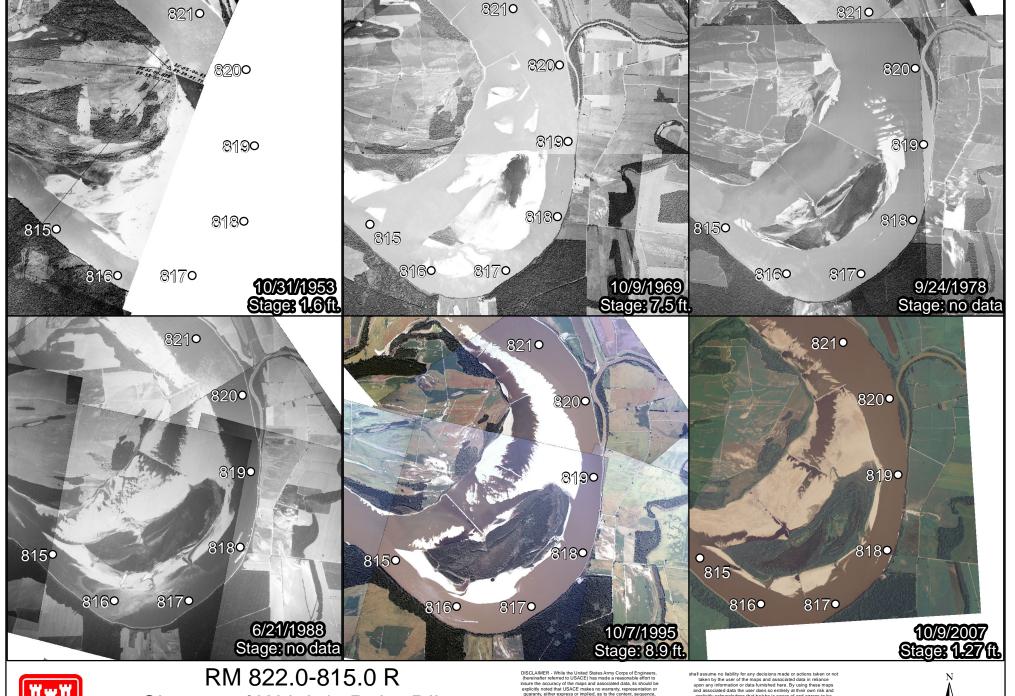
819

818

817 9

816°

1975





Chute 2 of Wright's Point Dikes

US Army Corps of Engineers®

1:80,000 Distance to gage: 28 river miles

Created by: Erin Marks Guntrer Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 822.0-815.0R_Chute2ofWrightsPointDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be the state of the s

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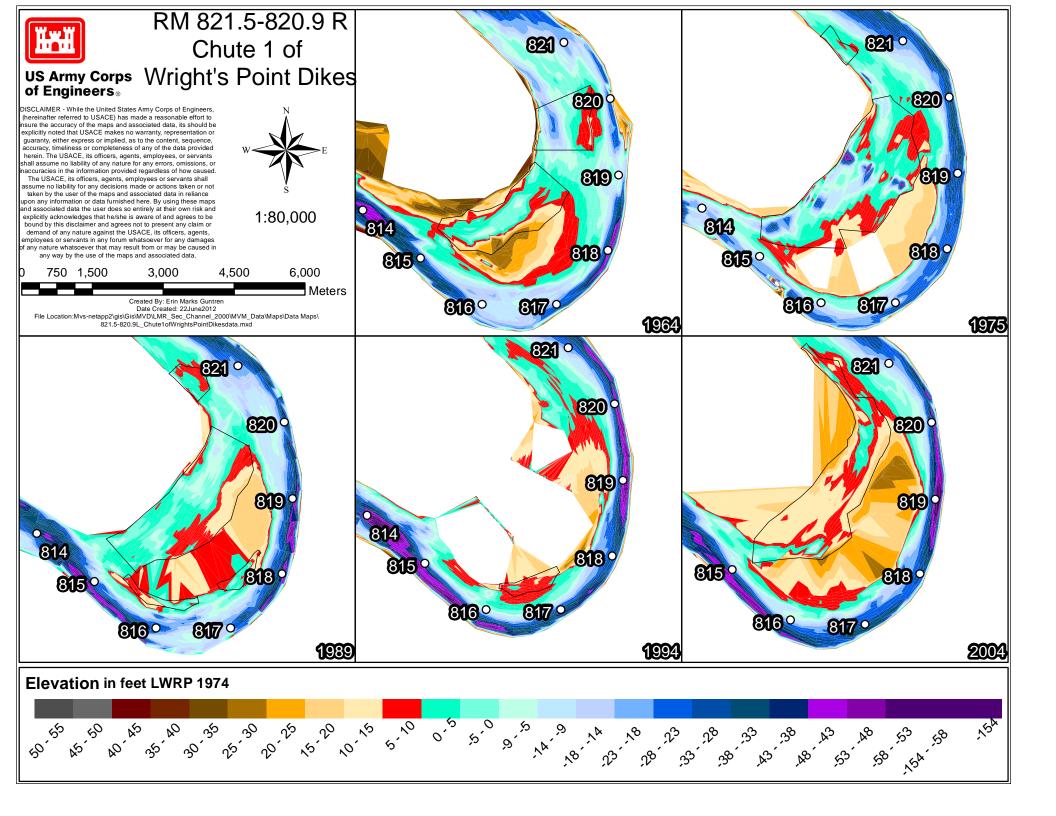


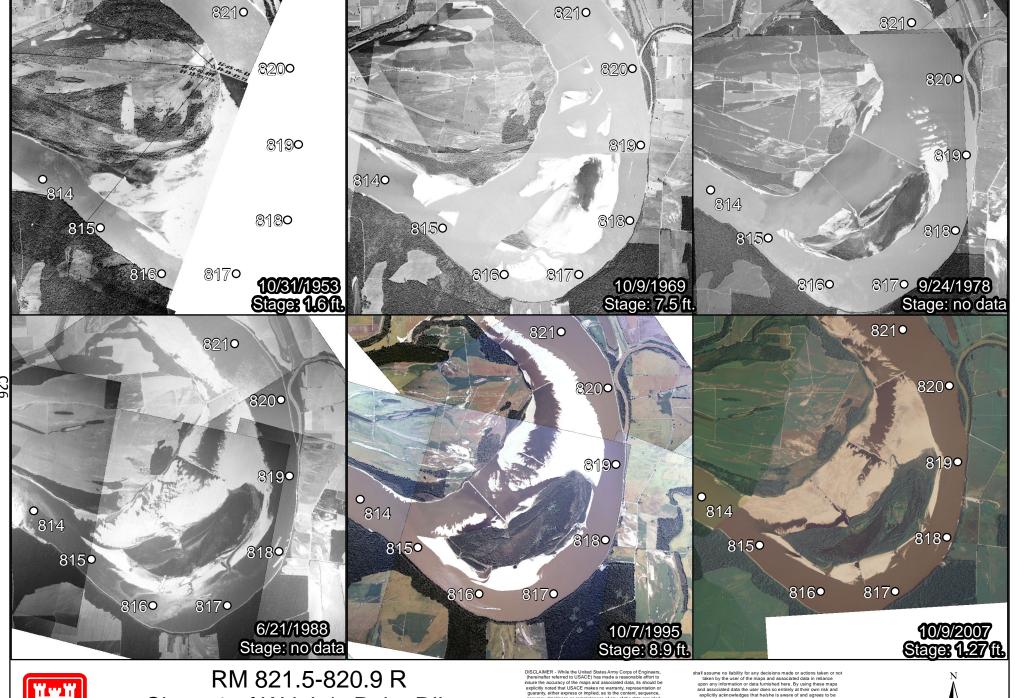
1,800

3,600

5,400

7,200







of Engineers®

Chute 1 of Wright's Point Dikes

1:80,000 Distance to gage: 26 river miles

Created by: Erin Marks Guntrer Date Created: 10February2011 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 821.5-820.9R_Chute1ofWrightsPointDikesphotos.mxd

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1,750

3,500

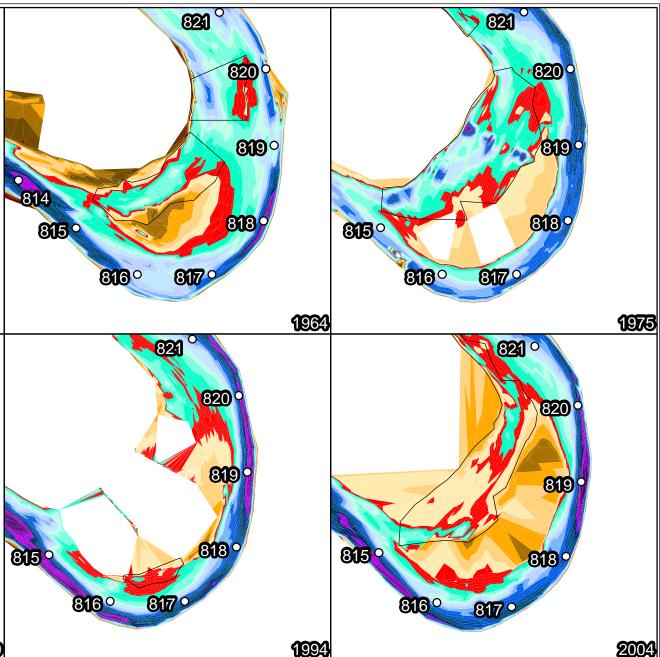
7,000 5,250

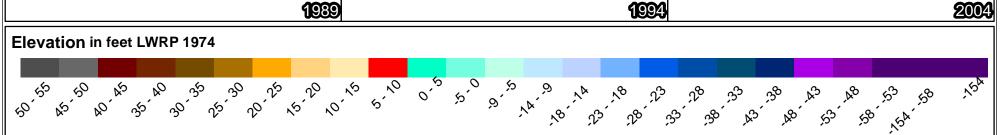
RM 817.4-816.2 R Chute 3 Outside US Army Corps of Engineers_® Wright's Point Dikes DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:80,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 750 1,500 3,000 4,500 6,000 Meters Created By: Erin Marks Guntren Date Created: 22June2012 $\label{location: Mvs-netapp2 in MvD\LMR_Sec_Channel_2000 MVM_Data Maps Data Maps Notation: Mvs-netapp2 in Mvs$ 817.4-816.2L Chute3OutsideWrightsPointDikesdata.mxd

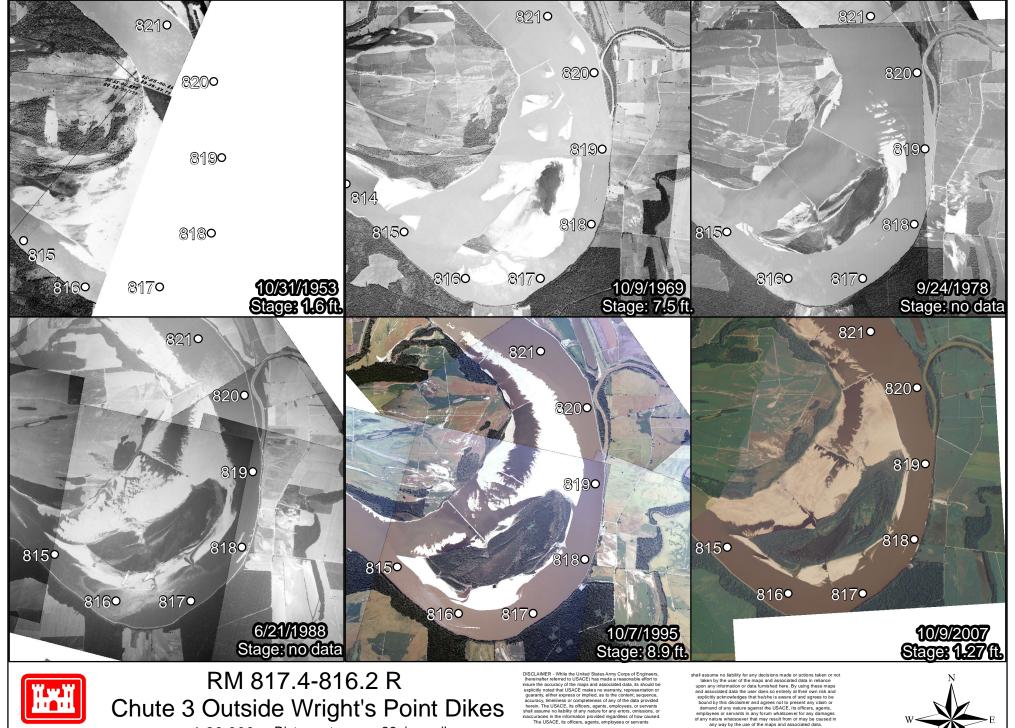
814

820

819







US Army Corps of Engineers

Chute 3 Outside Wright's Point Dikes

1:80,000 Distance to gage: 26 river miles

Created by: Erin Marks Guntrer Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
817.-816.2R_Chute30uisde\WightsPointDikesphotos.mxd

1,800

3,600

of any nature whatsoever that may result from or may be caused it any way by the use of the maps and associated data.

5,400

7,200



RM 812.0-811.5 L Chute 1 Outside Below US Army Corps of Engineers Tamm Bend Dikes 8120 DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to 8130 nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, 810 employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 4,000 500 1,000 2,000 3,000 Meters Created By: Erin Marks Guntrer 1964 809 Date Created: 22June2012 File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 812.0-811.5L Chute1OutsideBelowTammBendDikesdata.mxd **812**° 8120 812° 8130 **813**° 810° 1989 1994

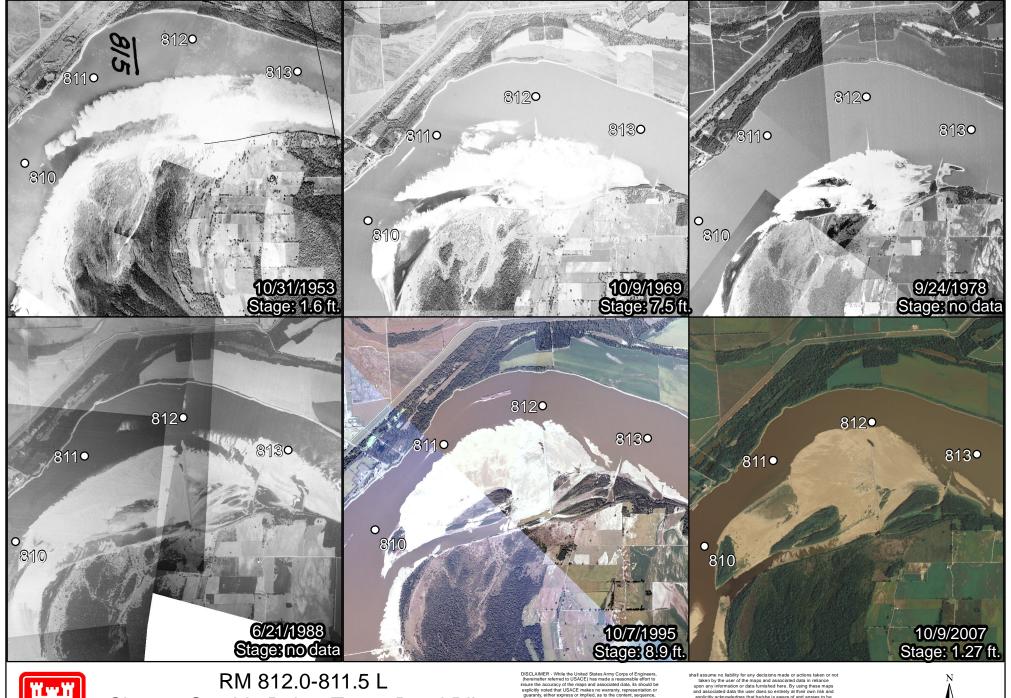
813°

1975

813°

2004

Elevation in feet LWRP 1974





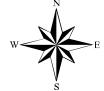
Chute 1 Outside Below Tamm Bend Dikes

1:55,000 Distance to gage: 34 river miles

Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 812.0-811.5L_Chute1OutsideBelowTammBendDikesphotos.mxd

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2,400 3,600 1,200

4,800 Meters

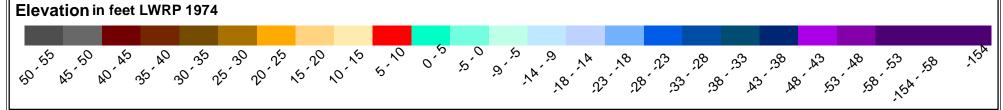
RM 811.5-809.9 L **812**° Chute 2 of Below 813 US Army Corps of Engineers Tamm Bend Dikes DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or 8109 guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided 810° herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 809 4,000 500 1,000 2,000 3,000 809 Meters Created By: Erin Marks Guntre Date Created: 22June2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR Sec Channel 2000\MVM Data\Maps\Data Maps\ 1964 811.5-809.9L_Chute2ofBelowTammBendDikesdata.mxd **812**° 813 8120 **813**° 810 ° 810° 1994 1989

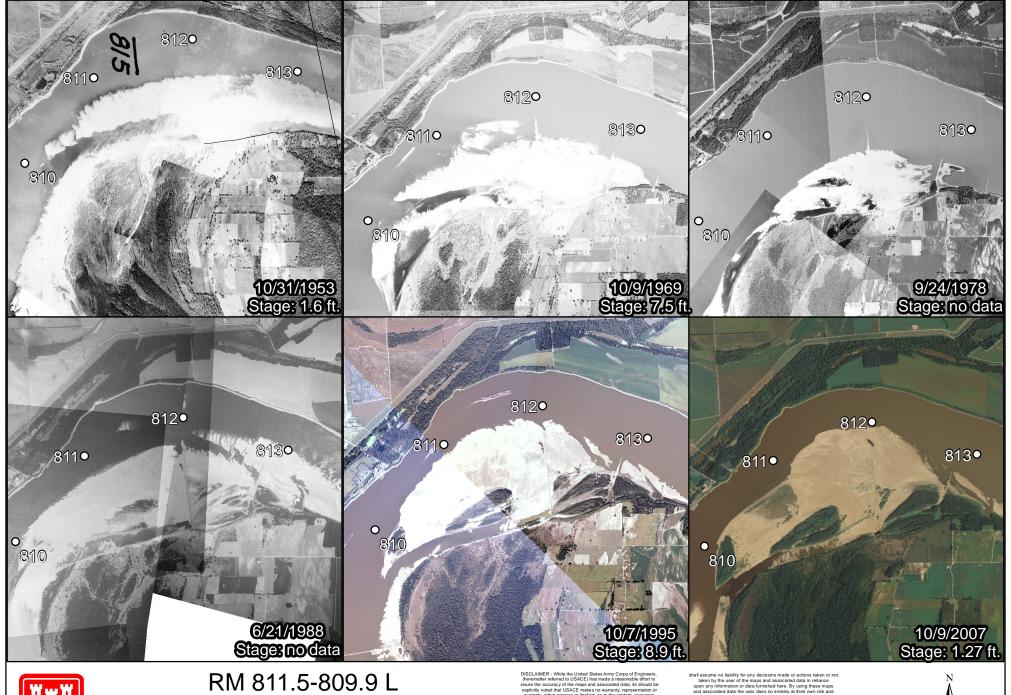
813°

1975

813°

2004







RM 811.5-809.9 L Chute 2 of Below Tamm Bend Dikes

US Army Corps of Engineers_®

1:55,000 Distance to gage: 38 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVDI.MR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
811.5-809.9L_Chute2ofBelowTammBendDikesphotos.mxd

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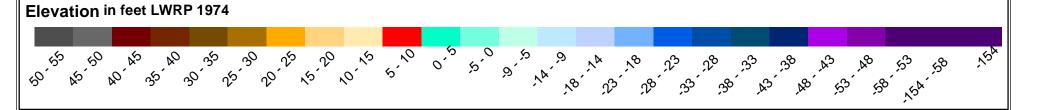
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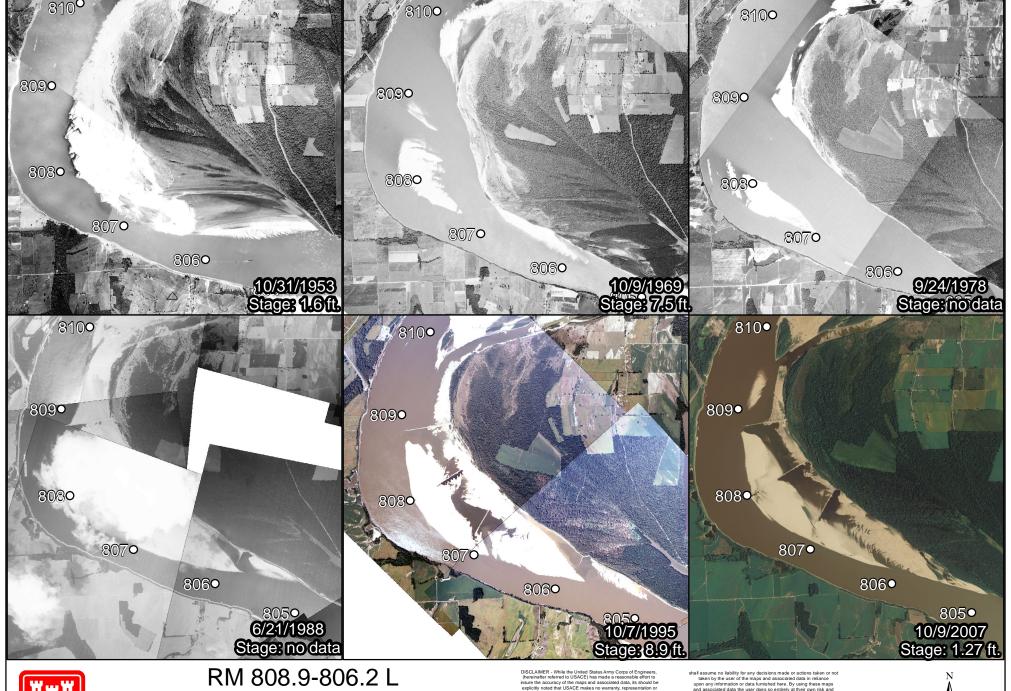
625 1,250 2,500

3,750 5,000

RM 808.9-806.2 L 8109 **810°** Chute of Nebraska **US Army Corps Point Dikes** of Engineers. DISCLAIMER - While the United States Army Corps of Engineers, **809** ° **809**° (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance 808 upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:70,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages of any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 650 1,300 2,600 3,900 5,200 806 Meters Created By: Erin Marks Guntre Date Created: 22June2012 805 °1964 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 808.9-806.2L_ChuteofNebraskaPointDikesdata.mxd 810° 810° 810° 809 809 808 808 805 1994 805° 1989



805 • 2004





RM 808.9-806.2 L Chute of Nebraska Point Dikes

US Army Corps 1:70,00 of Engineers_®

1:70,000 Distance to gage: 38 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
808.9-806.2L_ChuteofNebrasakaPointDikesphotos.mxd

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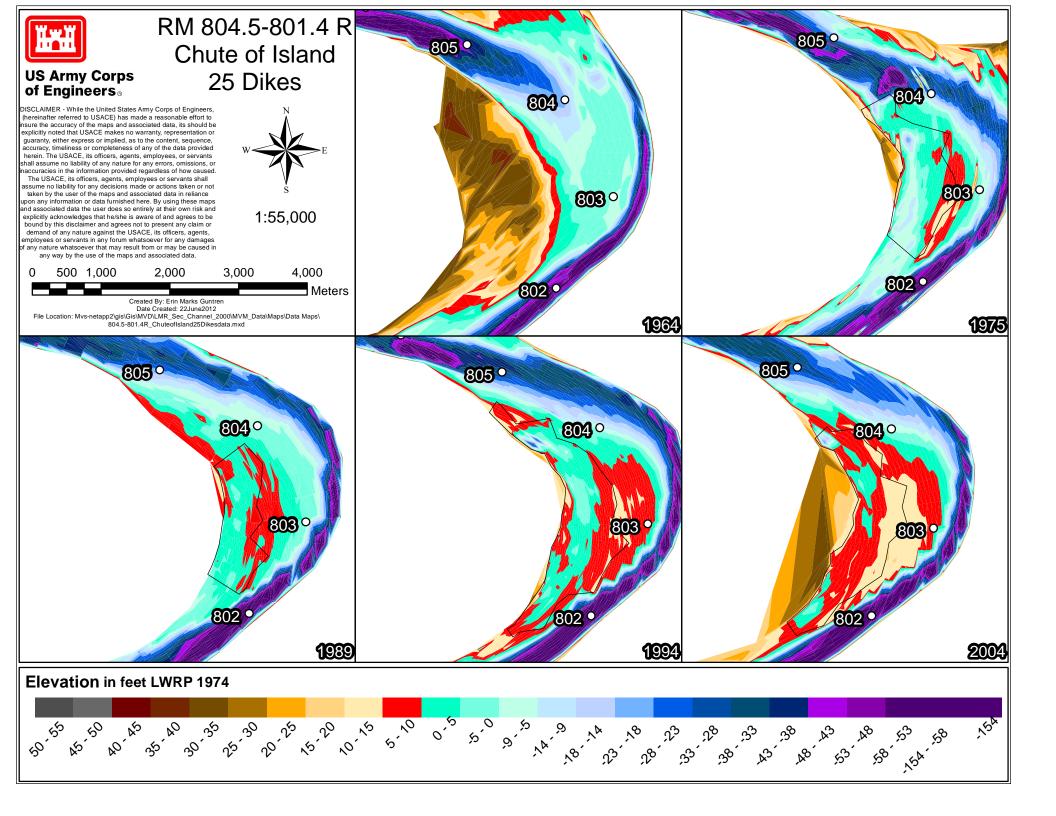


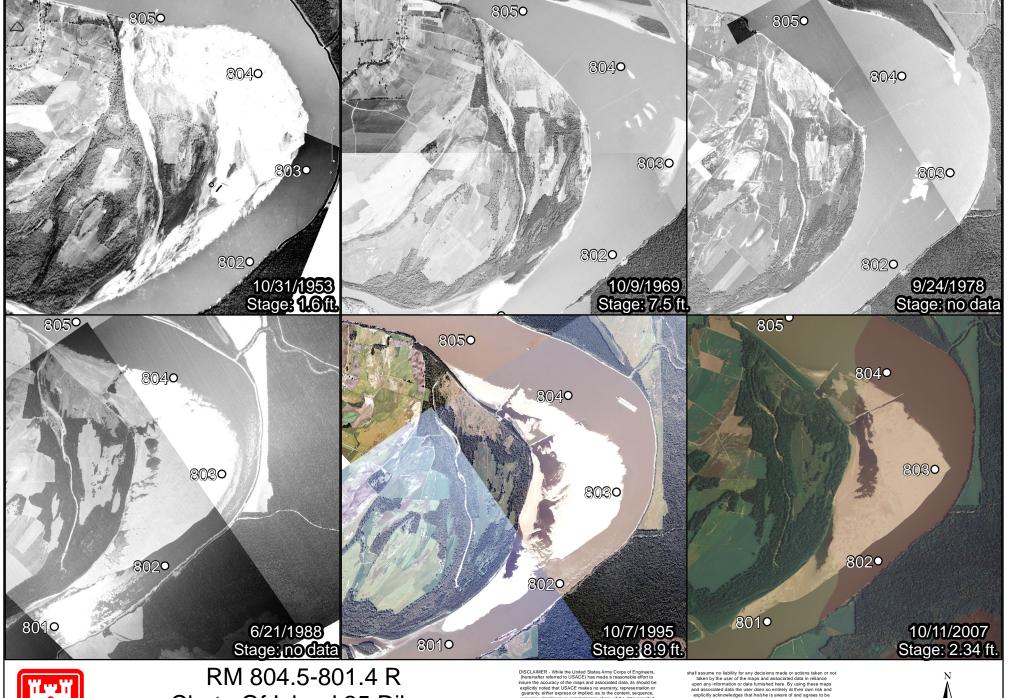
800 1,600

4,800

3,200

6,400







Chute Of Island 25 Dikes

Distance to gage: 43 river miles 1:55,000

Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
804.5-801.4R_Chuteoflsland25Dikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, (hereinalter referred to USACE) has made a reasonable effort to nauer the accuracy of the maps and associated data, its should be accurated the second of the second

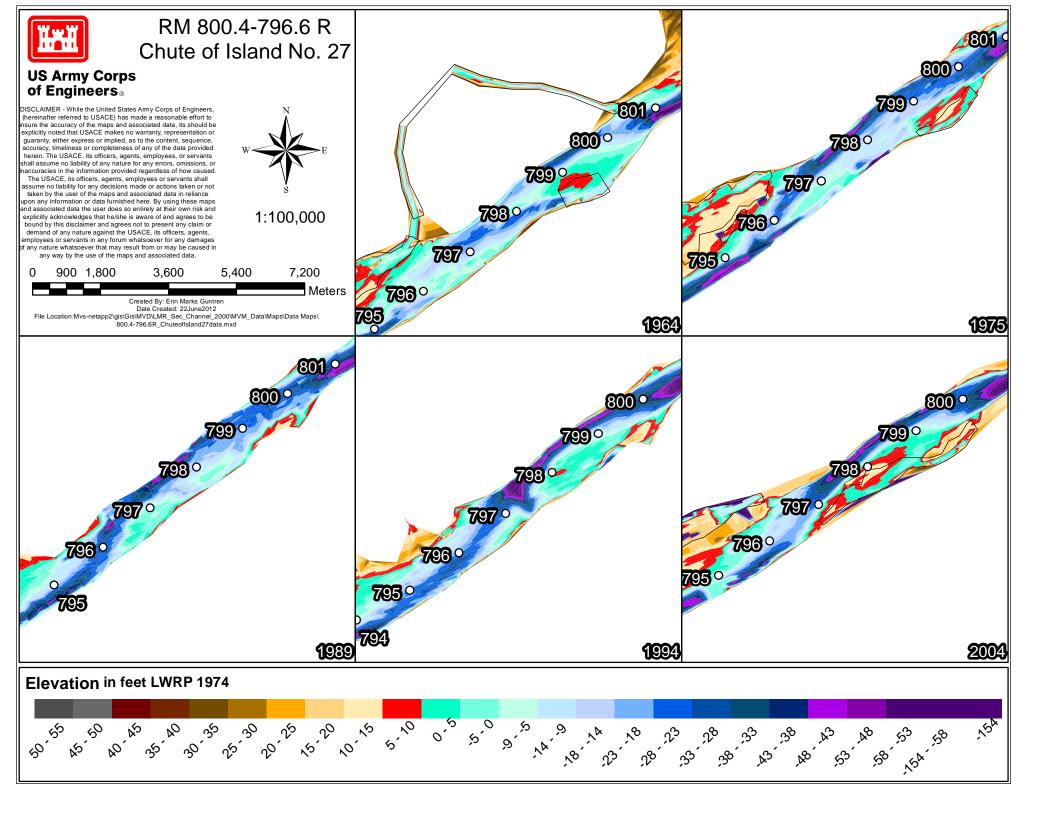
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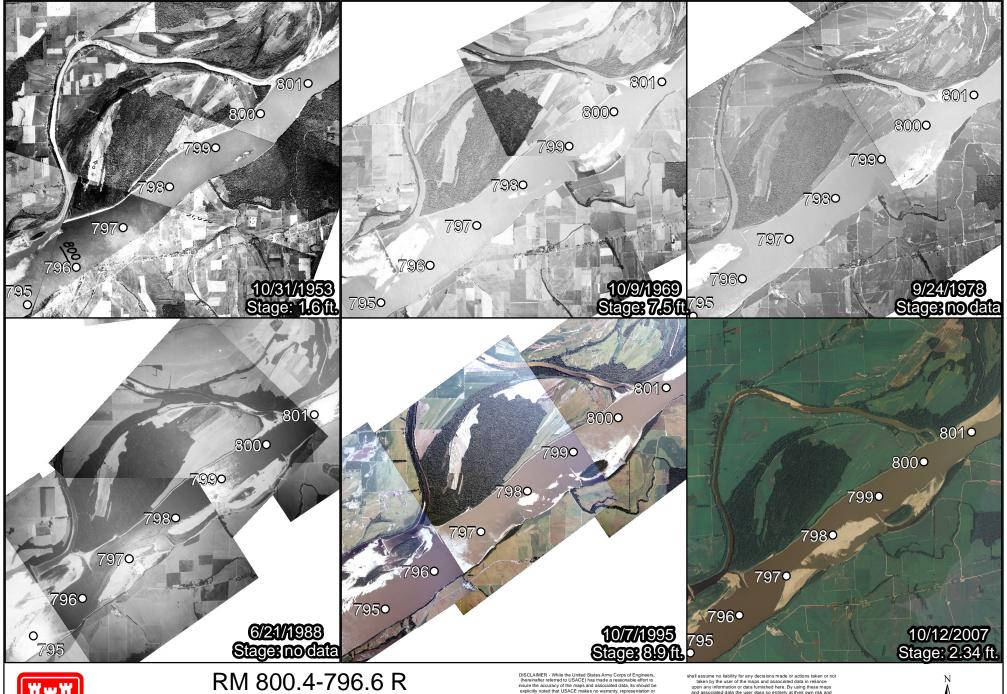
3,600



2,400 1,200

4,800







Chute of Island No. 27

1:100,000 Distance to gage: 48 river miles

Created by: Erin Marks Guntren Date Created: 27June2012 $\label{lem:path:maps} File \ Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data\ Maps\Data\ Maps\Dat$ 800.4-796.6R_ChuteofIsland27photos.mxd

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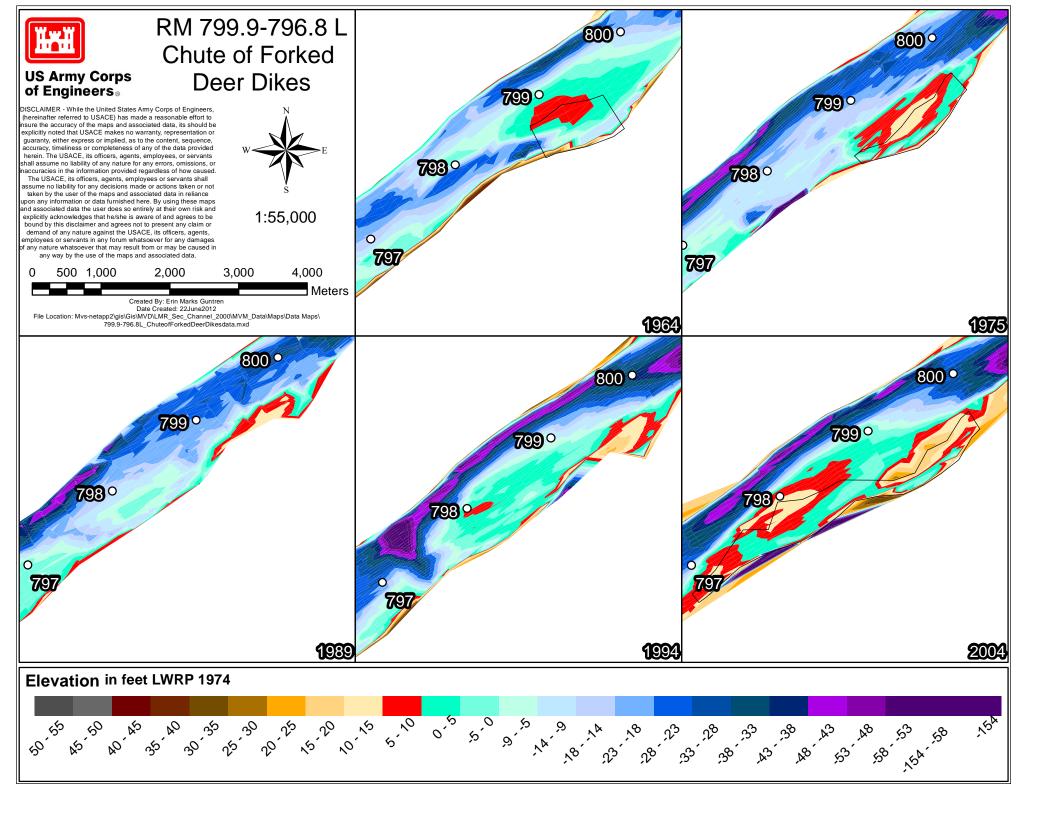


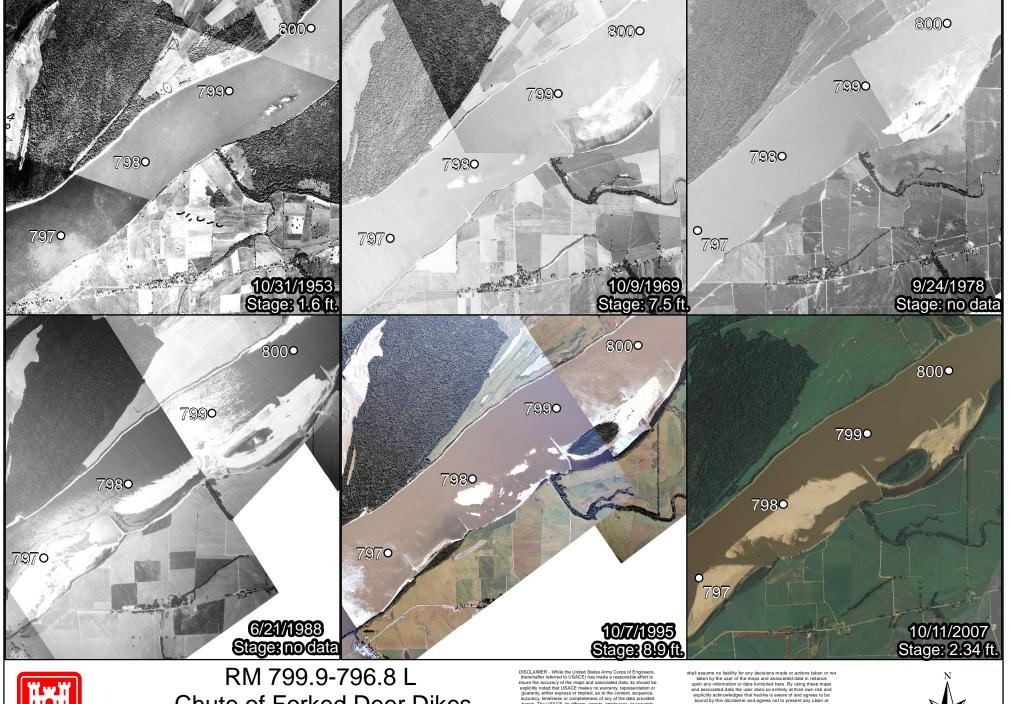
1,125 2,250

4,500

6,750

9,000







Chute of Forked Deer Dikes

1:55,000 Distance to gage: 47 river miles

Created by: Erin Marks Guntren Date Created 27 June2012

File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
799.9-796.8L_ChuteofForkedDeerDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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1,250

2,500

3,750

5,000

Appendix D: Reach D - River Miles 796.5-750 Memphis District

Fifteen secondary channels were identified in Reach D (see below). Only ten secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table D1. Secondary channels and their upstream river mile for Reach D; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute 1 of Ashport Golddust Dikes	796.2R	Chute of Sunrise Towhead	777.5R	Chute 2 of Dean Island	761.6R
Chute 2 Outside Ashport Golddust Dikes	795.6R	Chute of Hatchie Island	775.1L	Chute Outside Densford Bar	755.6L
Chute of Elmont Bar	793.0R	Chute Opposite Lookout Dikes	772.8L	Chute of Corona Bar Dikes	753.8R
Chute of Keyes Point Dikes	791.8L	Chute of Lookout Dikes	772.4R		
Chute 3 of Ashport Golddust Dikes	791.0R	Chute of Below Richardson Landing Dikes	767.1L		
Chute of Plum Point Dikes	784.5L	Chute 1 Outside Dean Island	761.6R		

Reach Summary

Table D2. Sum of Reach D area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yds3)		
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	210	380	740	1,120	4,670,000	16,552,000
1975	100%	400	830	1,650	2,250	8,403,000	34,371,000
1994	98%	560	1,020	1,680	2,710	14,070,000	42,364,000
2004	100%	270	780	1,500	2,280	6,533,000	31,080,000

Table D3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach D. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Occasion Observat	River	Vaan	Q		Area	a (Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 1 of Ashport Golddust Dikes	796.2- 791.3R	1964	100%	60	170	430	760	1,123,000	8,247,000
Chute 1 of Ashport Golddust Dikes	796.2- 791.3R	1975	92%	130	230	440	630	2,503,000	9,549,000
Chute 1 of Ashport Golddust Dikes	796.2- 791.3R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Ashport Golddust Dikes	796.2- 791.3R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Ashport Golddust Dikes	796.2- 791.3R	2004	100%	50	90	230	470	980,000	4,948,000
Chute 2 Outside Ashport Golddust Dikes	795.6- 795.1R	1964	100%	0	0	0	0	0	0
Chute 2 Outside Ashport Golddust Dikes	795.6- 795.1R	1975	100%	0	0	10	50	4,000	316,000
Chute 2 Outside Ashport Golddust Dikes	795.6- 795.1R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 Outside Ashport Golddust Dikes	795.6- 795.1R	1994	100%	0	0	0	0	0	0
Chute 2 Outside Ashport Golddust Dikes	795.6- 795.1R	2004	100%	0	0	0	0	0	0
Chute of Elmont Bar	793- 784.1R	1964	100%	50	130	330	600	1,156,000	6,698,000
Chute of Elmont Bar	793- 784.1R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Elmont Bar	793- 784.1R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Elmont Bar	793- 784.1R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Elmont Bar	793- 784.1R	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Keyes Point Dikes	791.8- 785.5L	1964	100%	30	40	70	120	977,000	2,180,000
Chute of Keyes Point Dikes	791.8- 785.5L	1975	100%	90	210	380	430	1,768,000	7,531,000
Chute of Keyes Point Dikes	791.8- 785.5L	1989	100%	80	250	630	890	2,377,000	12,166,000
Chute of Keyes Point Dikes	791.8- 785.5L	1994	100%	220	400	640	920	5,698,000	16,265,000

Secondary Channel	River	Year	Cvrg.		Area	a (Acres)	Volume (yd³)		
	Miles	Icai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Keyes Point Dikes	791.8- 785.5L	2004	100%	130	310	630	990	3,362,000	13,662,000
Chute 3 of Ashport Golddust Dikes	791- 789R	1964	100%	80	130	270	400	1,435,000	5,732,000
Chute 3 of Ashport Golddust Dikes	791- 789R	1975	100%	0	0	0	0	0	0
Chute 3 of Ashport Golddust Dikes	791- 789R	1989	100%	0	0	0	0	0	0
Chute 3 of Ashport Golddust Dikes	791- 789R	1994	100%	0	0	0	0	0	0
Chute 3 of Ashport Golddust Dikes	791- 789R	2004	100%	0	0	0	0	0	0
Chute of Plum Point Dikes	784.5- 780.8L	1964	100%	10	40	90	170	213,000	1,759,000
Chute of Plum Point Dikes	784.5- 780.8L	1975	100%	70	130	260	380	1,379,000	5,583,000
Chute of Plum Point Dikes	784.5- 780.8L	1989	100%	0	20	100	250	31,000	1,865,000
Chute of Plum Point Dikes	784.5- 780.8L	1994	100%	30	100	230	350	552,000	4,259,000
Chute of Plum Point Dikes	784.5- 780.8L	2004	100%	20	90	270	500	527,000	5,111,000
Chute of Sunrise Towhead	777.5- 774.1R	1964	98%	80	190	380	660	1,811,000	8,061,000
Chute of Sunrise Towhead	777.5- 774.1R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Sunrise Towhead	777.5- 774.1R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Sunrise Towhead	777.5- 774.1R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Sunrise Towhead	777.5- 774.1R	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hatchie Island	775.1- 773.4L	1964	100%	10	30	100	220	148,000	1,849,000
Chute of Hatchie Island	775.1- 773.4L	1975	100%	10	40	80	120	186,000	1,421,000
Chute of Hatchie Island	775.1- 773.4L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hatchie Island	775.1- 773.4L	1994	30%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hatchie Island	775.1- 773.4L	2004	100%	0	0	0	0	0	0

Sacandan, Channal	River	Voor	Ourd		Area	a (Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute Opposite Lookout Dikes	772.8- 771.3L	1964	100%	0	0	0	0	0	0
Chute Opposite Lookout Dikes	772.8- 771.3L	1975	100%	150	230	320	340	3,315,000	8,185,000
Chute Opposite Lookout Dikes	772.8- 771.3L	1989	100%	70	190	380	480	1,463,000	7,351,000
Chute Opposite Lookout Dikes	772.8- 771.3L	1994	100%	110	190	310	570	2,043,000	7,497,000
Chute Opposite Lookout Dikes	772.8- 771.3L	2004	100%	40	150	250	300	918,000	4,744,000
Chute of Lookout Dikes	772.4- 769.4R	1964	100%	70	110	150	200	1,666,000	4,142,000
Chute of Lookout Dikes	772.4- 769.4R	1975	100%	70	120	170	210	1,392,000	4,141,000
Chute of Lookout Dikes	772.4- 769.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Lookout Dikes	772.4- 769.4R	1994	80%	30	70	110	140	564,000	2,295,000
Chute of Lookout Dikes	772.4- 769.4R	2004	100%	40	90	160	210	827,000	3,358,000
Chute of Below Richardson Landing Dikes	767.1- 764.3L	1964	100%	0	0	0	0	0	0
Chute of Below Richardson Landing Dikes	767.1- 764.3L	1975	100%	0	70	310	460	193,000	4,842,000
Chute of Below Richardson Landing Dikes	767.1- 764.3L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Richardson Landing Dikes	767.1- 764.3L	1994	100%	0	10	60	300	68,000	1,545,000
Chute of Below Richardson Landing Dikes	767.1- 764.3L	2004	100%	0	0	0	0	0	0
Chute 1 Outside Dean Island	761.6- 757.0R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 Outside Dean Island	761.6- 757.0R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 Outside Dean Island	761.6- 757.0R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 Outside Dean Island	761.6- 757.0R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Cacandan, Channal	River	Year	Cvrg.		Area	a (Acres)	Volume (yd³)		
Secondary Channel	Miles	rear	CVIg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 1 Outside Dean Island	761.6- 757.0R	2004	95%	0	30	160	280	74,000	2,528,000
Chute 2 of Dean Island	761.6- 758.7R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Dean Island	761.6- 758.7R	1975	100%	140	230	360	470	2,732,000	8,508,000
Chute 2 of Dean Island	761.6- 758.7R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Dean Island	761.6- 758.7R	1994	100%	60	100	160	230	1,175,000	3,795,000
Chute 2 of Dean Island	761.6- 758.7R	2004	100%	0	0	0	0	0	0
Chute Outside Densford Bar	755.6- 753.7L	1964	100%	20	60	150	240	379,000	2,739,000
Chute Outside Densford Bar	755.6- 753.7L	1975	100%	20	70	200	380	354,000	3,773,000
Chute Outside Densford Bar	755.6- 753.7L	1989	100%	0	20	70	170	87,000	1,357,000
Chute Outside Densford Bar	755.6- 753.7L	1994	100%	180	250	320	430	5,146,000	10,503,000
Chute Outside Densford Bar	755.6- 753.7L	2004	100%	40	120	160	220	753,000	3,332,000
Chute of Corona Bar Dikes	753.8- 753.2R	1964	100%	0	0	0	0	0	0
Chute of Corona Bar Dikes	753.8- 753.2R	1975	100%	0	0	0	0	0	0
Chute of Corona Bar Dikes	753.8- 753.2R	1989	100%	0	0	0	0	0	0
Chute of Corona Bar Dikes	753.8- 753.2R	1994	100%	0	0	0	0	0	0
Chute of Corona Bar Dikes	753.8- 753.2R	2004	100%	10	20	50	60	146,000	873,000

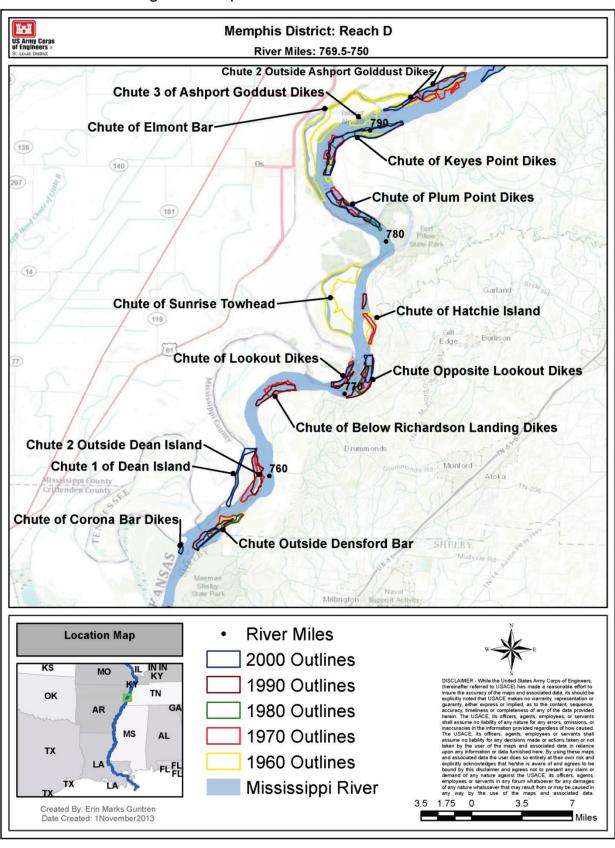
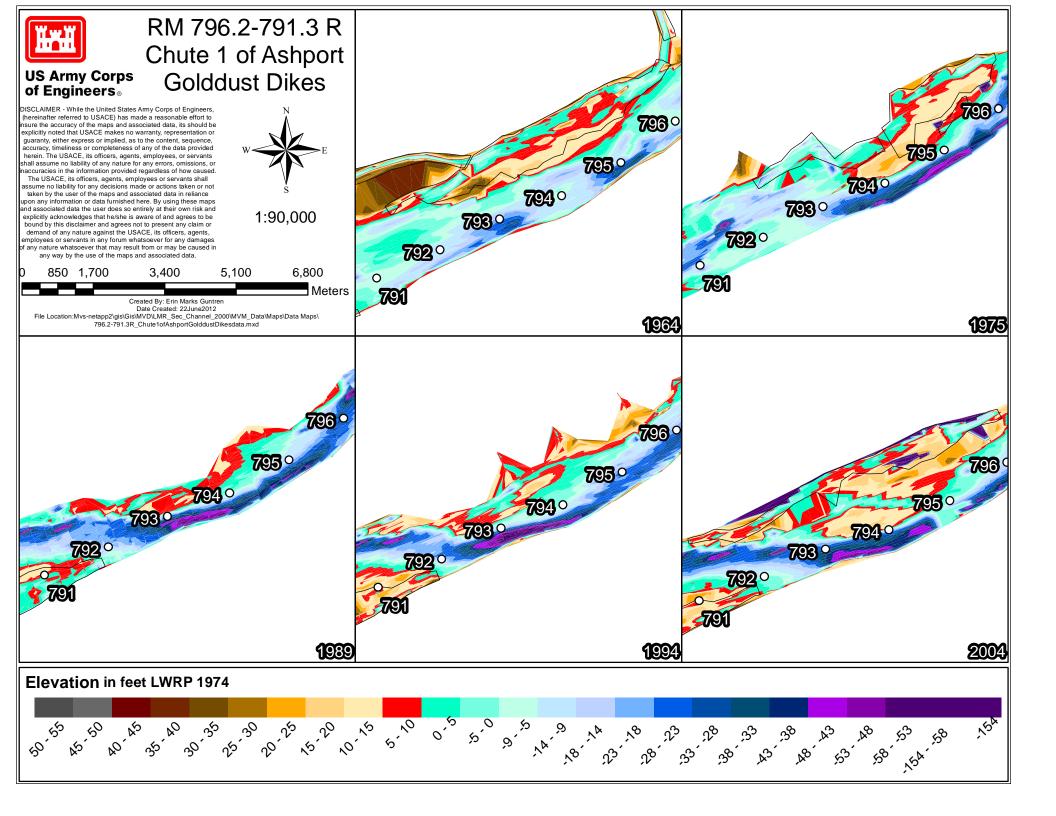
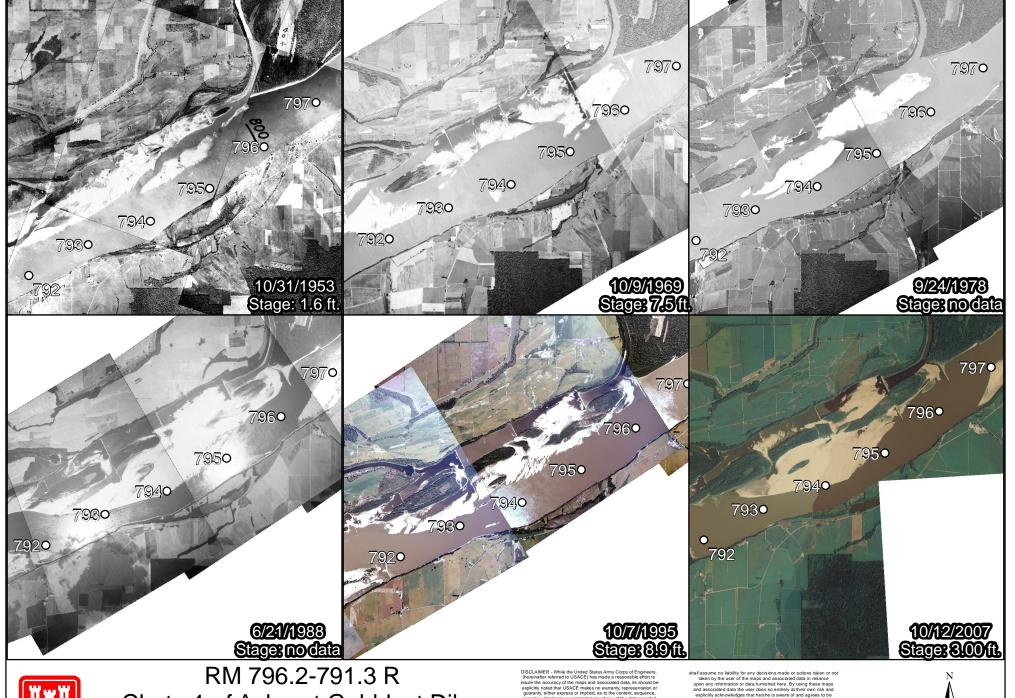


Figure D1. Memphis District Reach D river miles 796.5-750.







Chute 1 of Ashport Golddust Dikes

US Army Corps of Engineers

1:90,000 Distance to gage: 52 river miles

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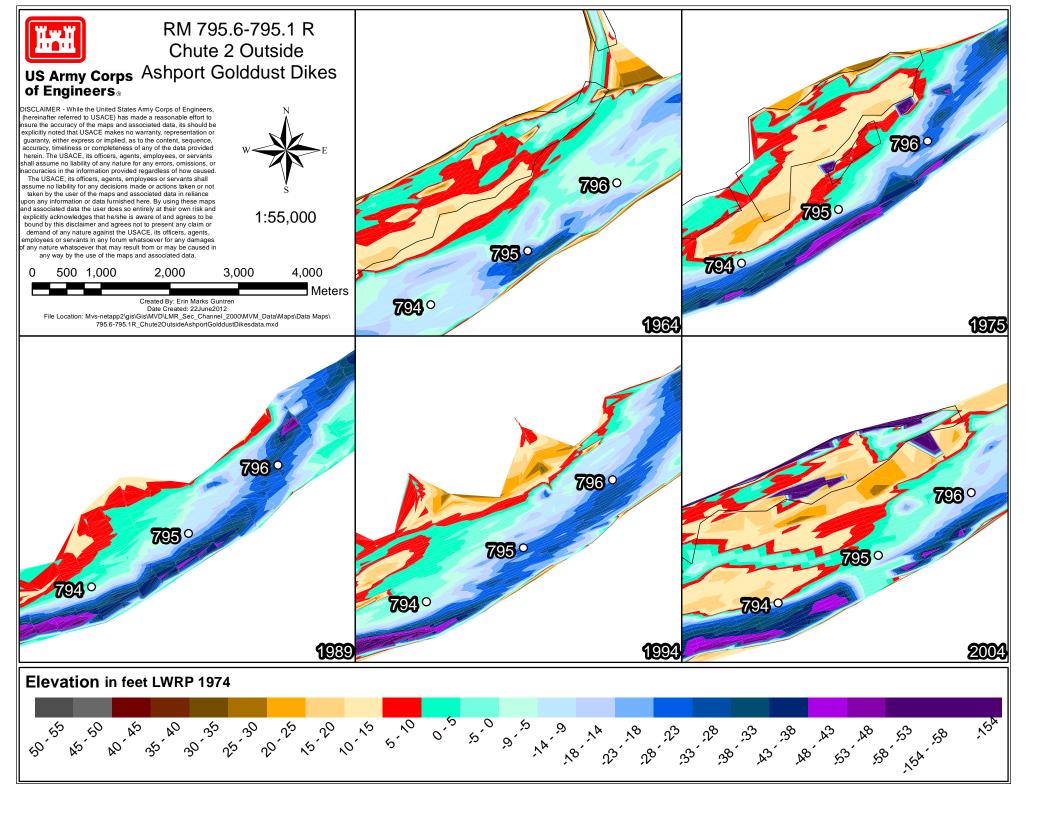


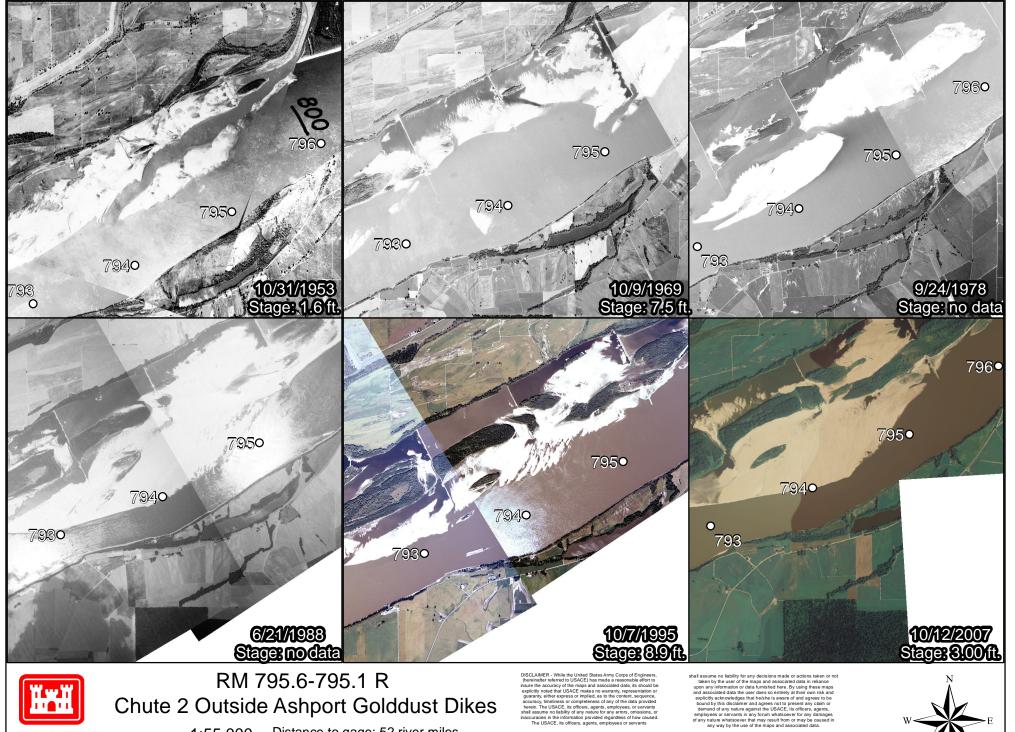
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1,250

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3,750

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Meters

US Army Corps of Engineers_®

1:55,000 Distance to gage: 52 river miles

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US Army Corps of Engineers ⊗

RM 793.0-784.1 R Chute of Elmont Bar

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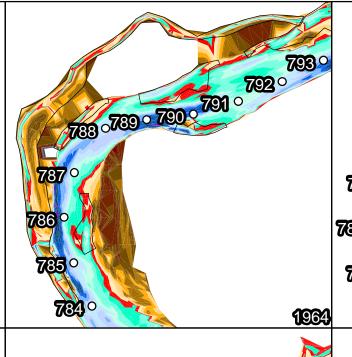
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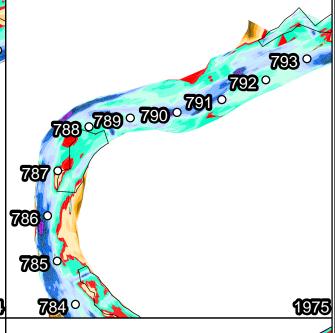


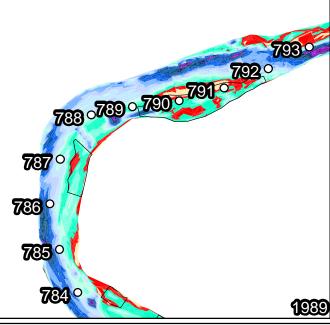
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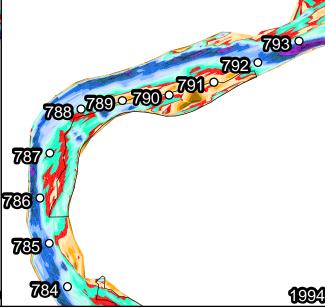


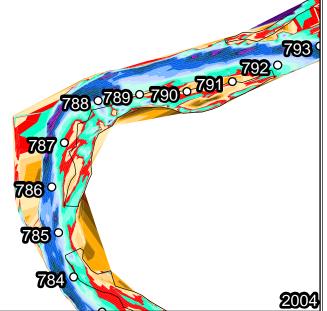
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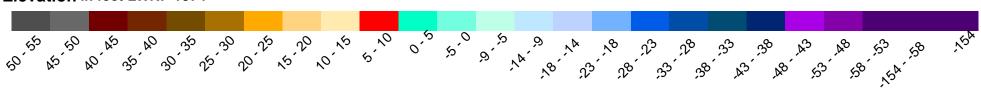


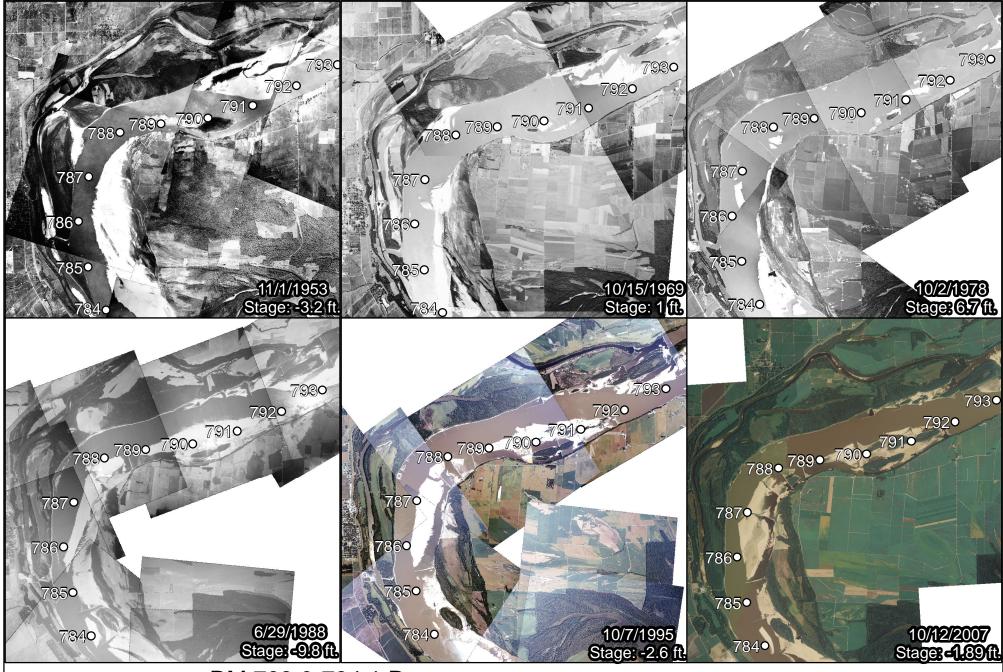






Elevation in feet LWRP 1974







RM 793.0-784.1 R Chute of Elmont Bar

1:130,000 Distance to gage: 54 river miles

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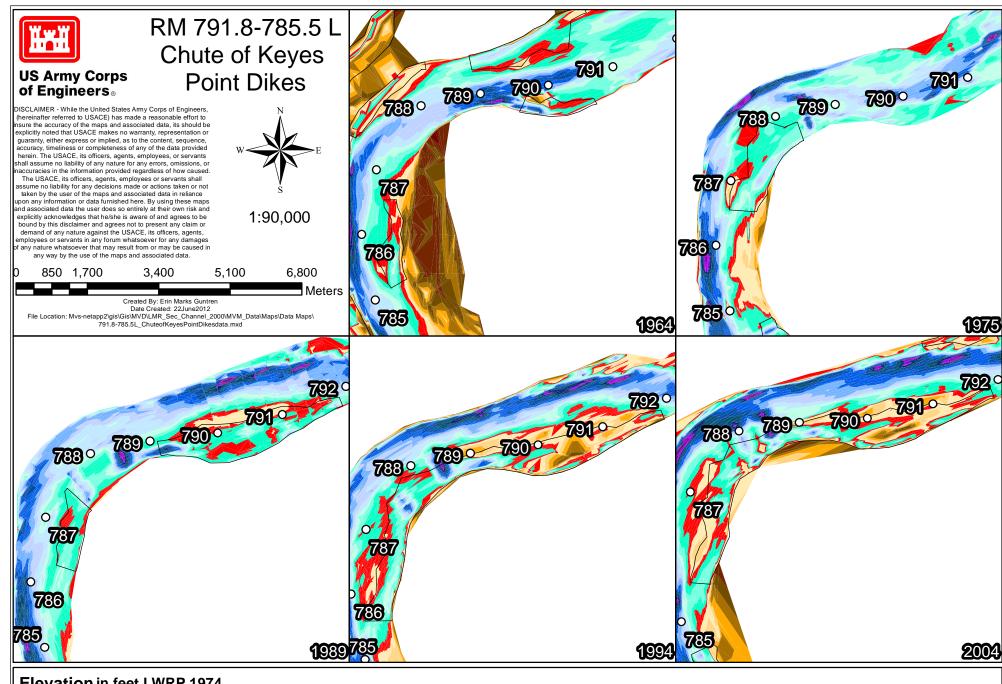


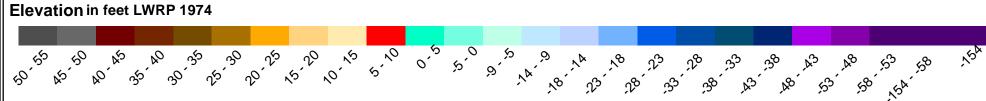
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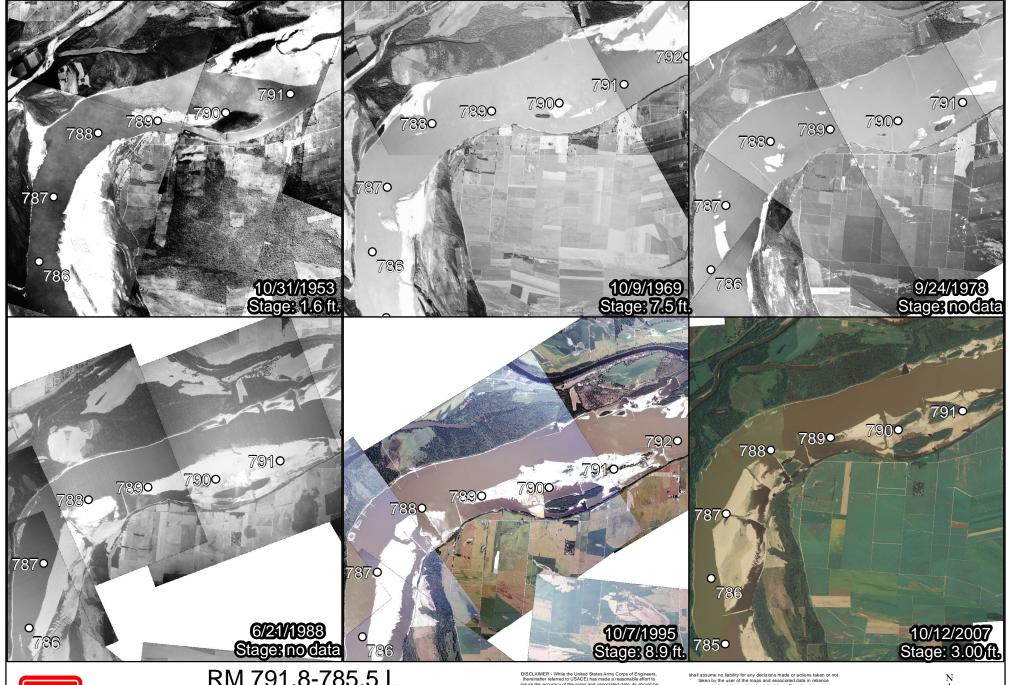
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5,800

11,600 8,700









RM 791.8-785.5 L Chute of Keyes Point Dikes

1:90,000 Distance to gage: 56 river miles

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Date Created: 27June2012
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786

RM 791.0-789.0 R Chute 3 of Ashport **Golddust Dikes**

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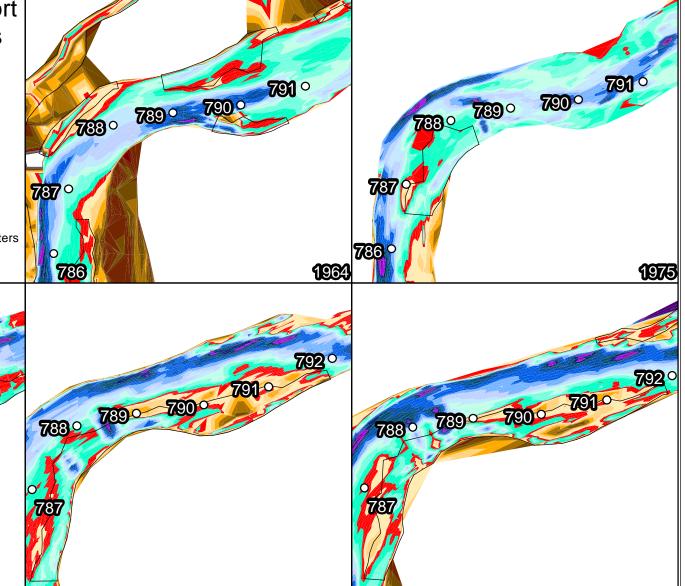
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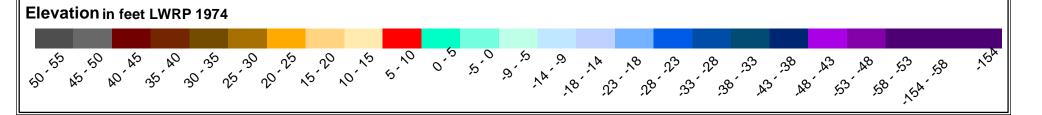
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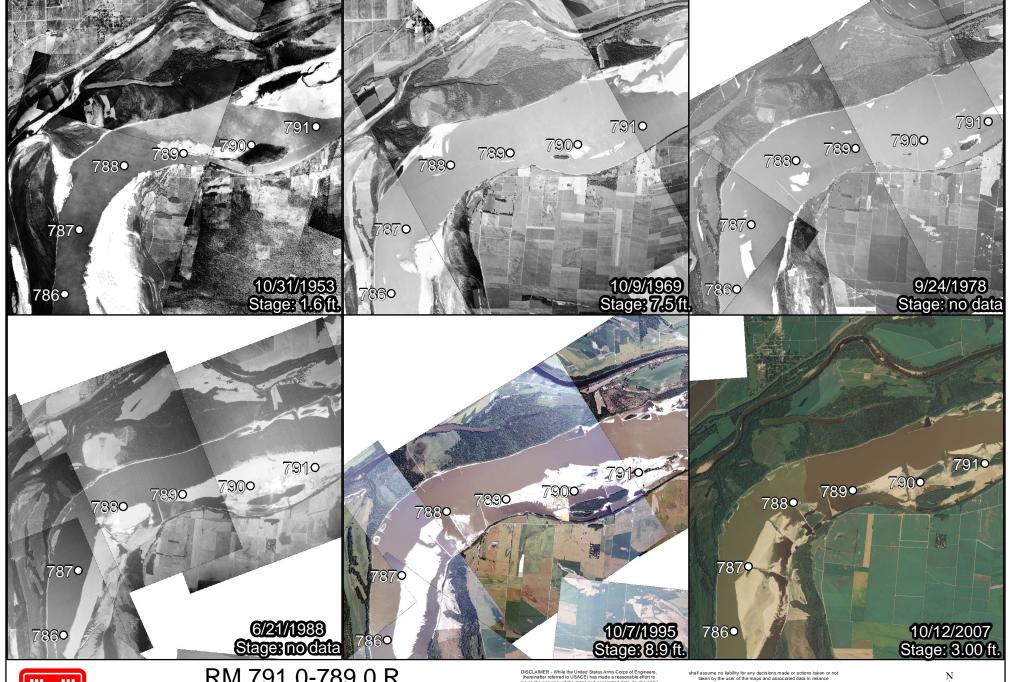
789° 789° 790°



1994

2004







RM 791.0-789.0 R Chute 3 of Ashport Golddust Dikes

US Army Corps of Engineers®

1:90,000 Distance to gage: 57 river miles

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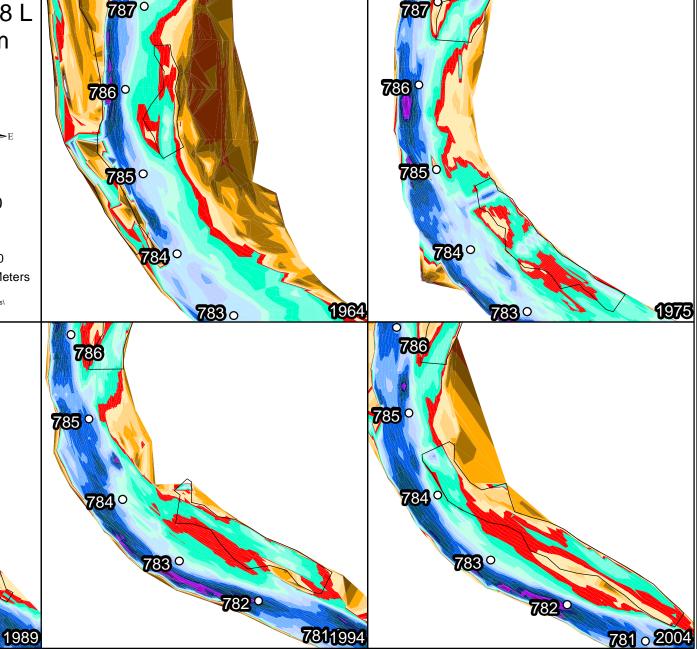
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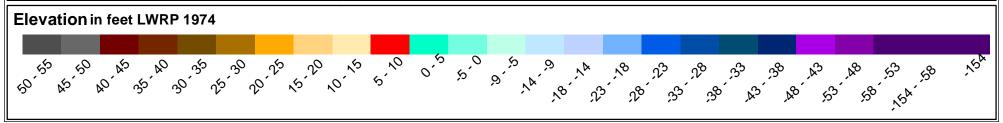
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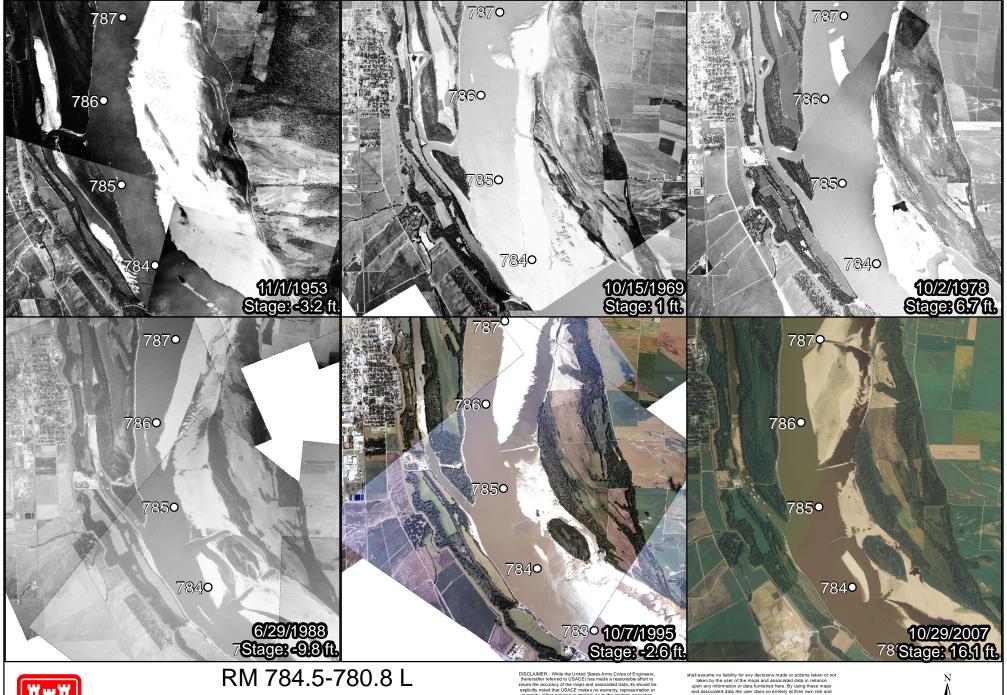
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785

7.83 °









RM 784.5-780.8 L Chute of Plum Point Dikes 1:70,000 Distance to gage: 49 river miles

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4,800

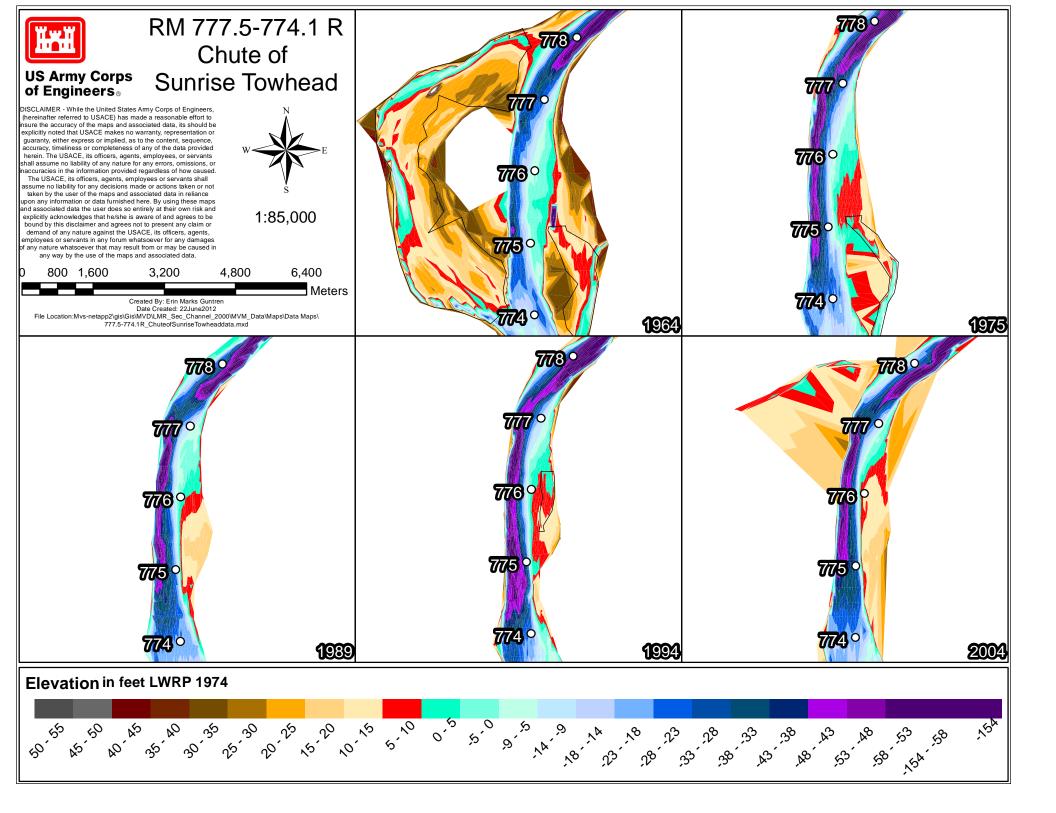
6,400

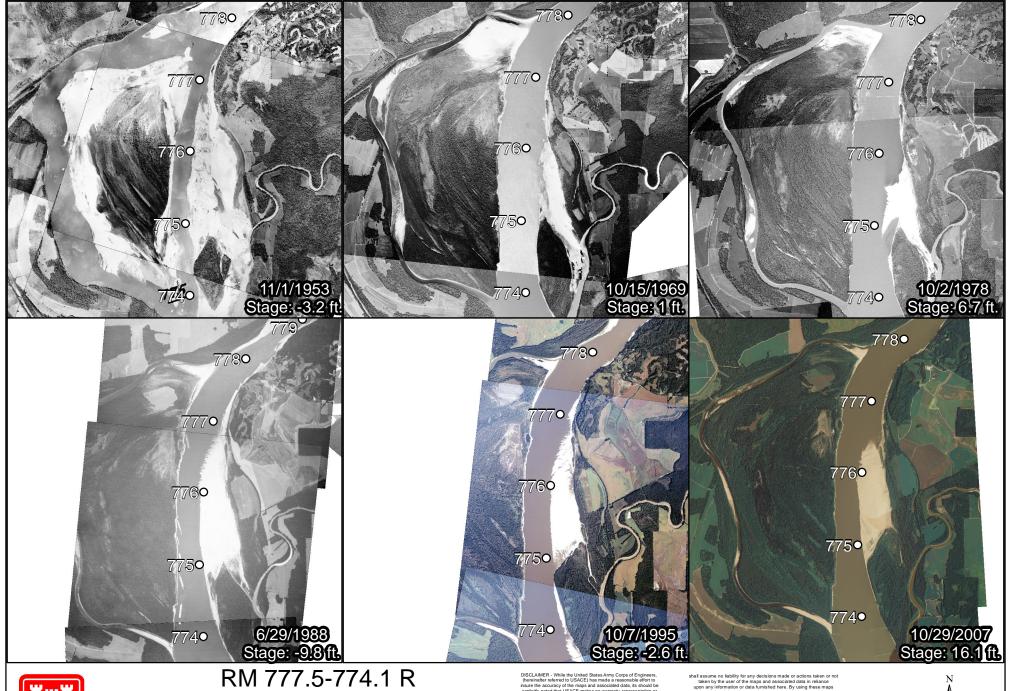
Meters

3,200



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Date Created: 27June2012
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784.5-780.8L_ChuteofPlumPointDikesphotos.mxd







RM 777.5-774.1 R Chute of Sunrise Towhead

1:85,000 Distance to gage: 42 river miles

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Date Created: 27June2012
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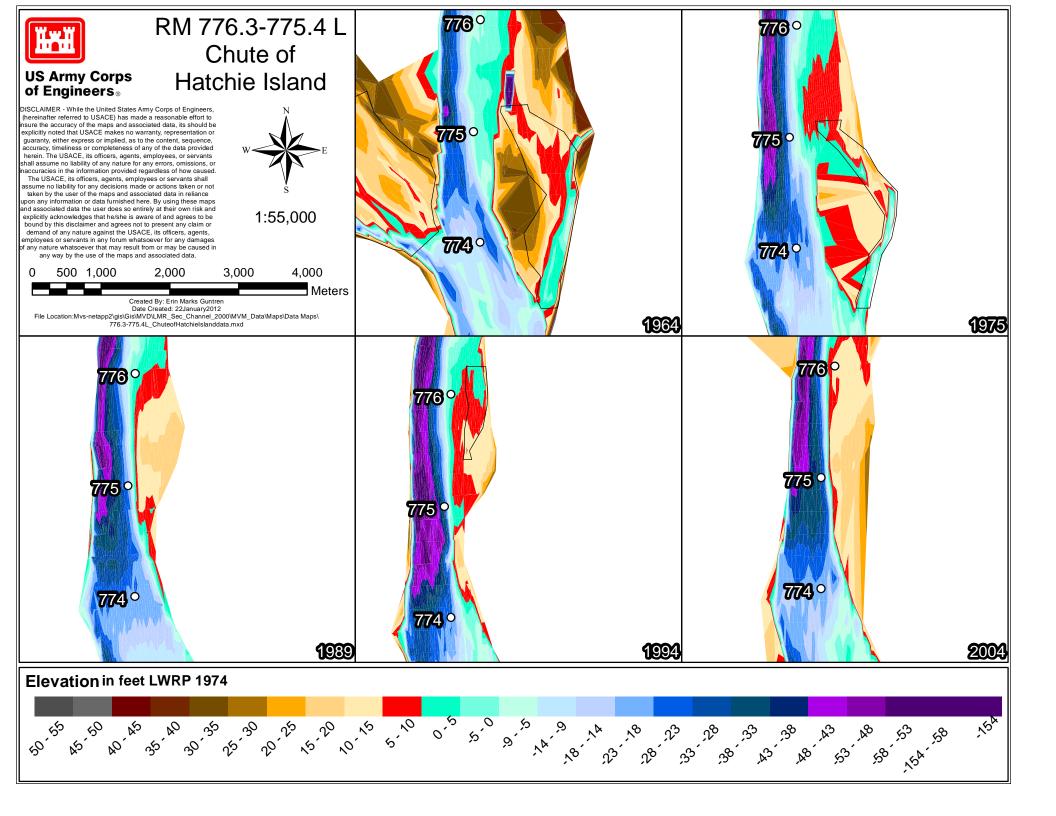


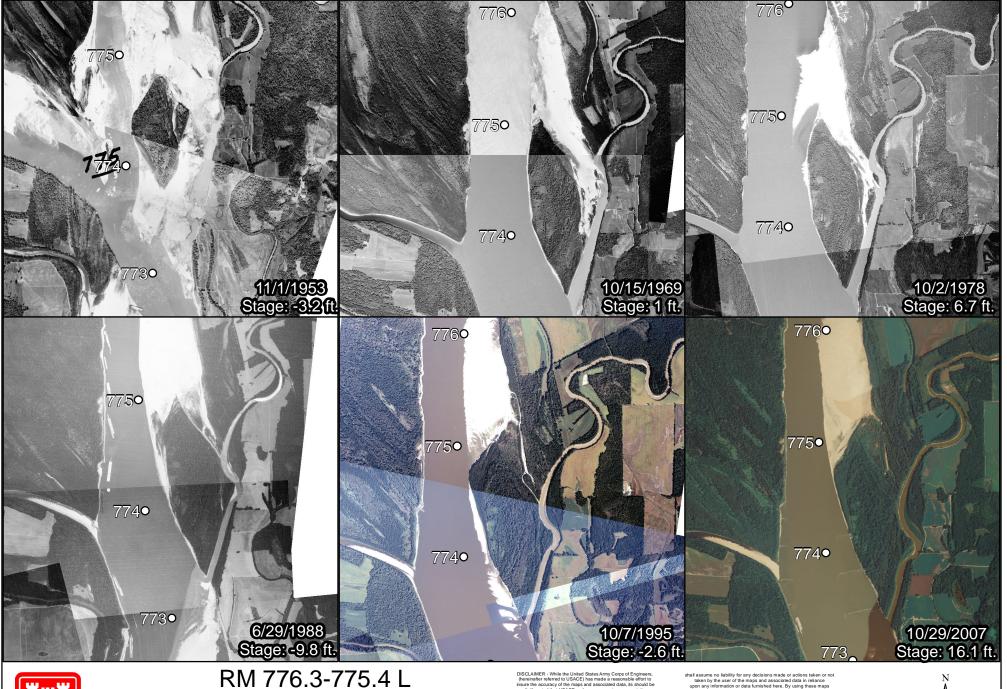
950 1,900

5,700

3,800

7,600







RM 776.3-775.4 L Chute of Hatchie Island 1:55,000 Distance to gage: 40 river miles

DISCLAIMER - While the United States Army Corps of Engineers, fivereinather referred to USACE) has made a reasonable effort to mare the accuracy of the maps and associated data, is should be made to the state of t

1,250

2,500

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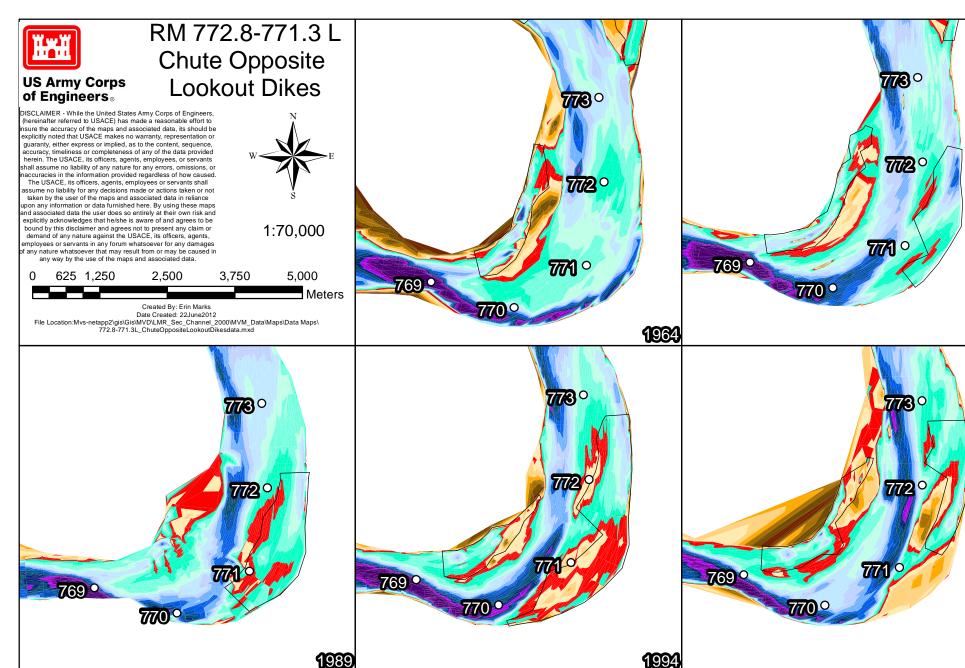
3,750

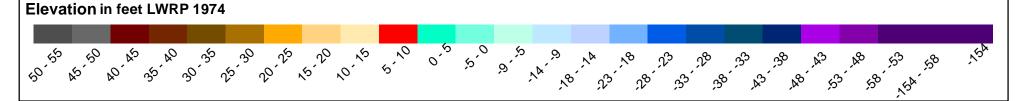
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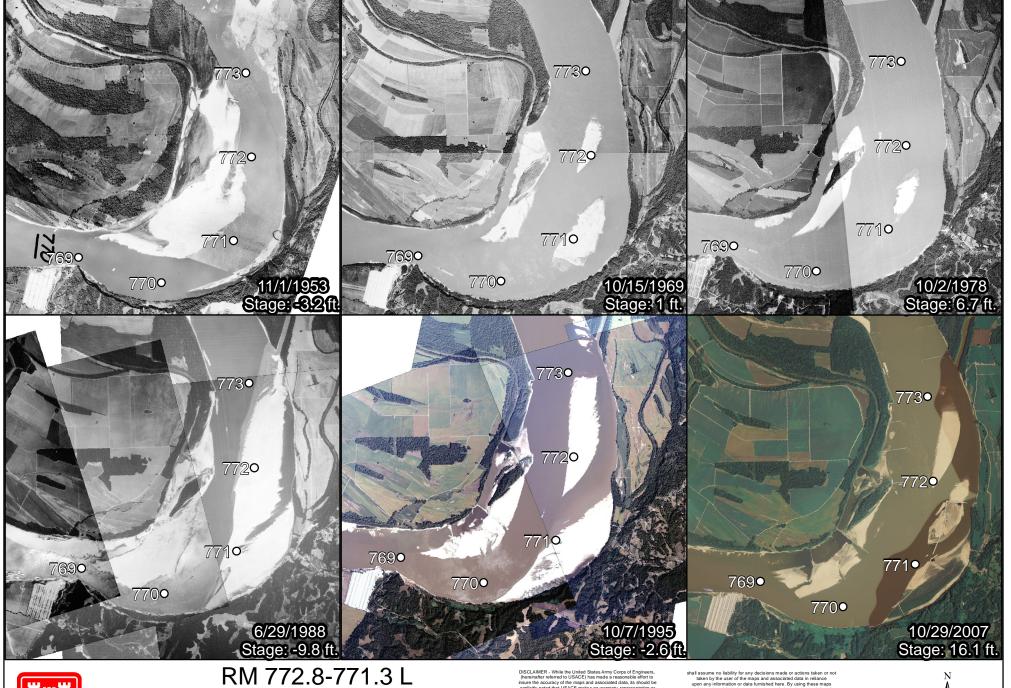
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RM 772.8-771.3 L Chute Opposite Lookout Dikes

1:70,000 Distance to gage: 37 river miles

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Date Created: 27June2012
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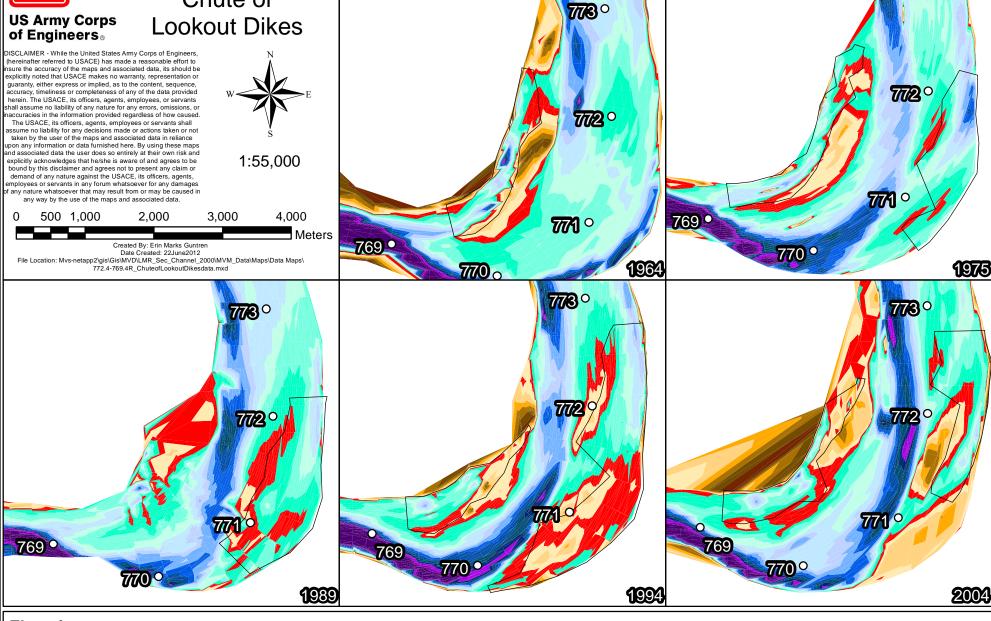
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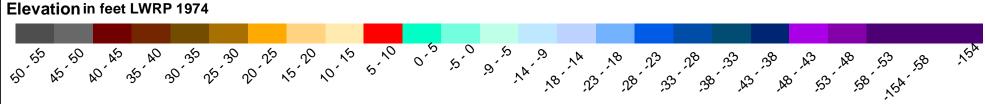
800 1,600 3,200 4,800

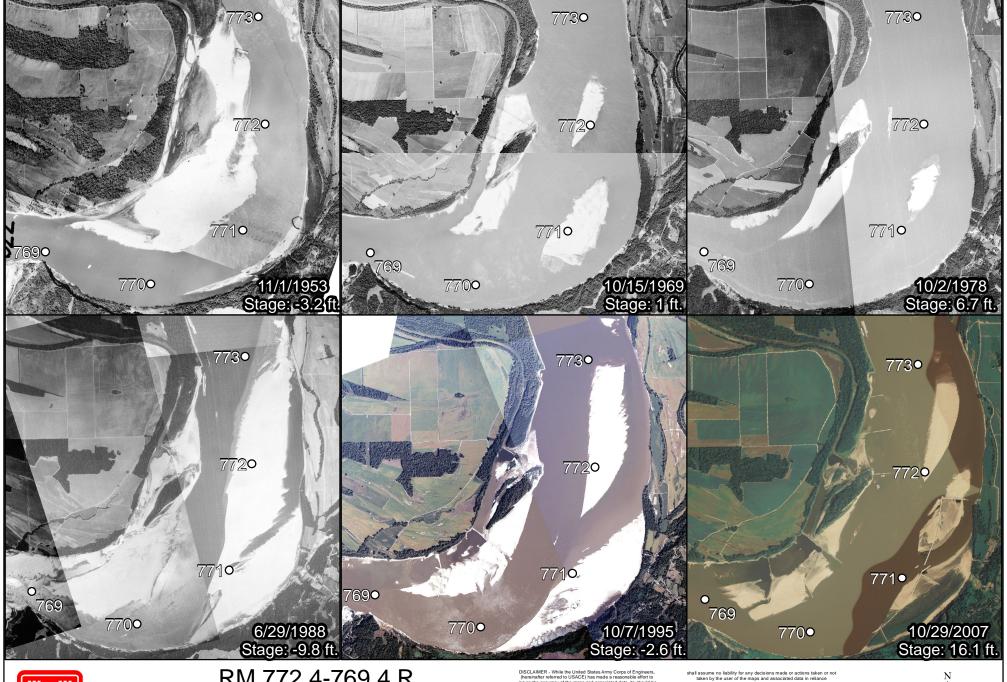
6,400 Meters

RM 772.4-769.4 R Chute of **Lookout Dikes**



7730







RM 772.4-769.4 R Chute of Lookout Dikes

1:55,000 Distance to gage: 37 river miles

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Date Created: 27June2012
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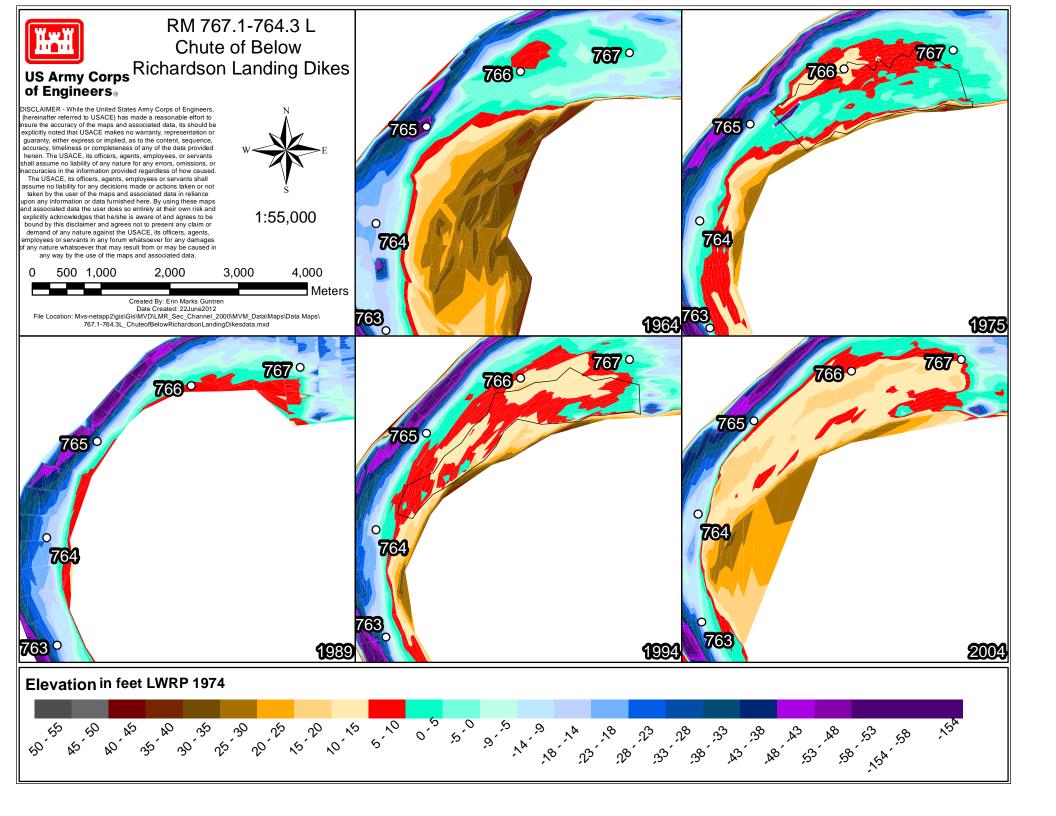


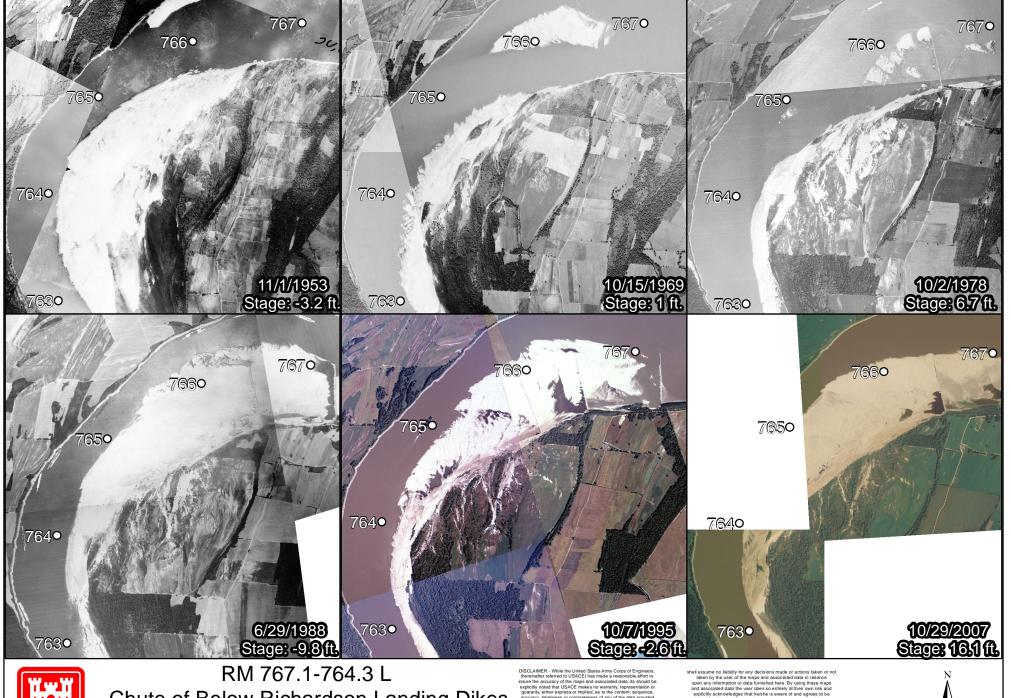
625 1,250

3,750

2,500

5,000







Chute of Below Richardson Landing Dikes

1:55,000 Distance to gage: 32 river miles

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767.1-764.3L_ChuteofBelowRichardsonLandingDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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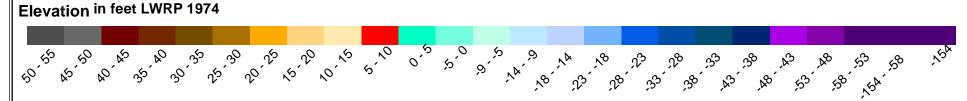


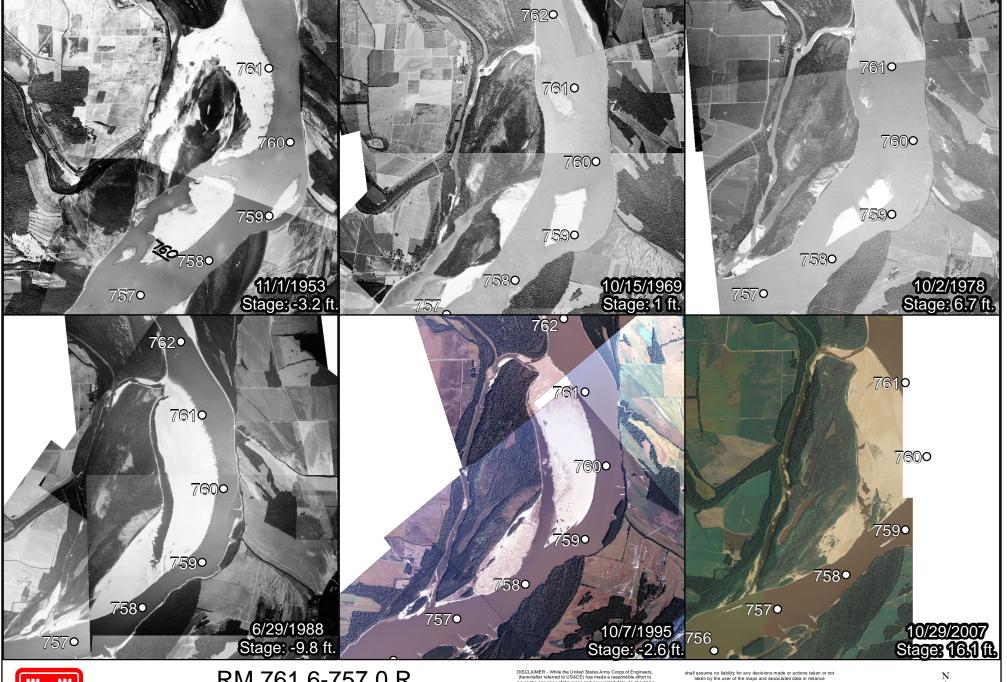
1,250 2,500

3,750

5,000

RM 761.6-757.0 R Chute 1 Outside **US Army Corps** Dean Island of Engineers. **761** ° DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to isure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or 760 accuracies in the information provided regardless of how caused 760 The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:80,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 6,000 **1934** 758 750 1,500 3,000 4,500 Meters 758 Created By: Erin Marks Guntrer Date Created: 22June2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 1975 761.6-758.5R Chute1OutsideDeanIslanddata.mxd **757** ° 762 762 ° **761** ° 760 759 759° 757 753 758° **757** • 1989 757 9 2004 1994







RM 761.6-757.0 R Chute 1 Outside Dean Island 1:80,000 Distance to gage: 25 river miles

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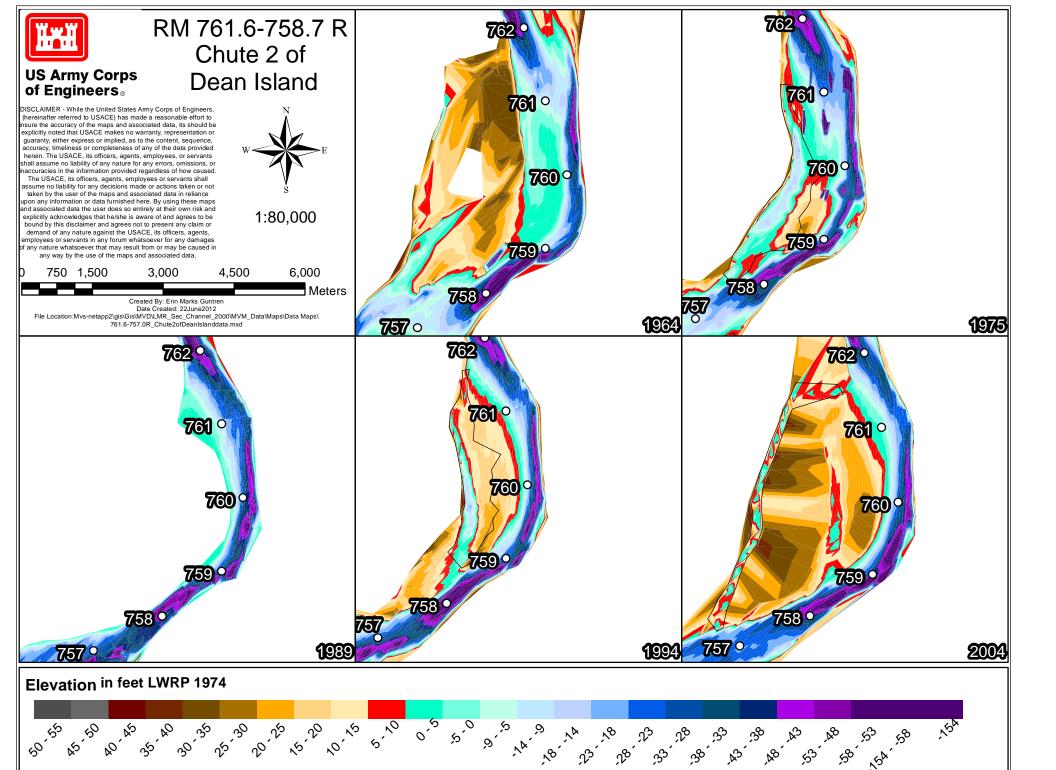
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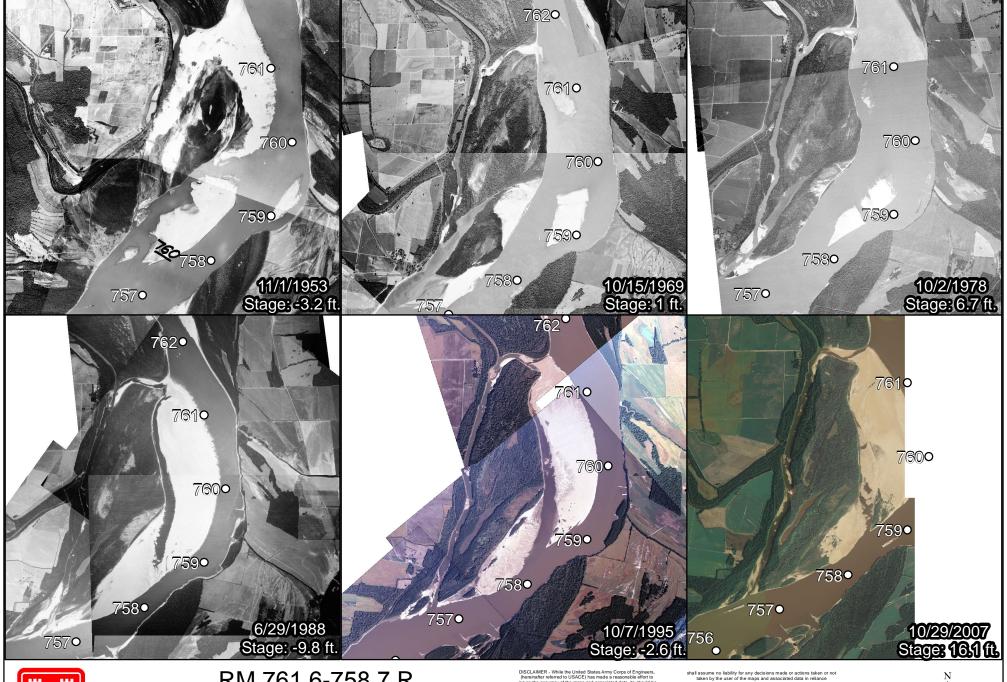


1,800

3,600

7,200







RM 761.6-758.7 R Chute 2 of Dean Island 1:80,000 Distance to gage: 25 river miles DISCLAIMER - While the United States Army Corps of Engineers, fivereinather referred to USACE) has made a reasonable effort to mare the accuracy of the maps and associated data, is should be made to the state of t

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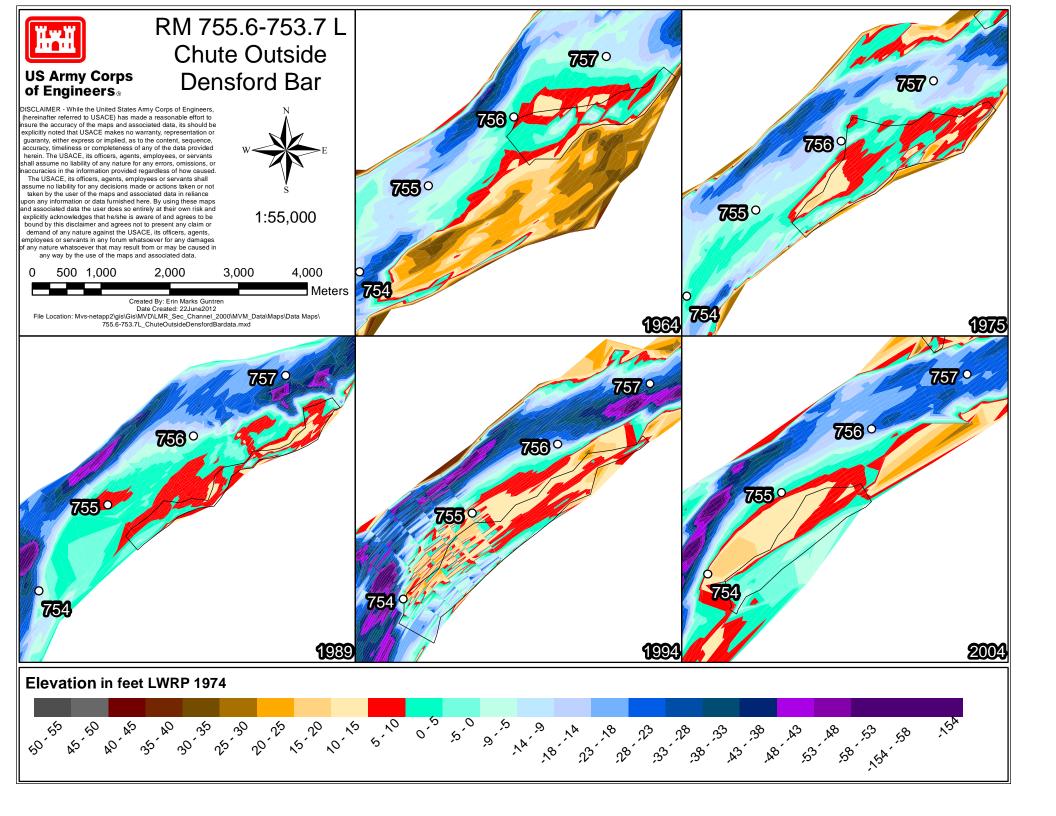


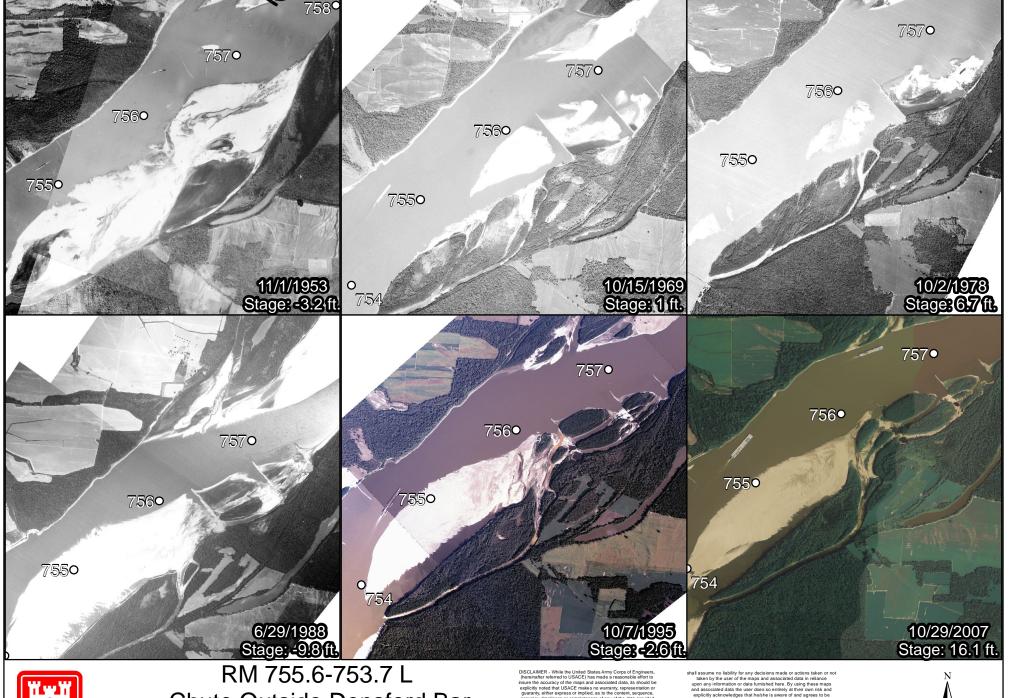
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761.6-757.0R_Chute2ofDeanIslandphotos.mxd

0 900 1,800

3,600 5,400

7,200







Chute Outside Densford Bar

1:55,000 Distance to gage: 21 river miles

Created by: Erin Marks Guntren Date Created: 28June2012
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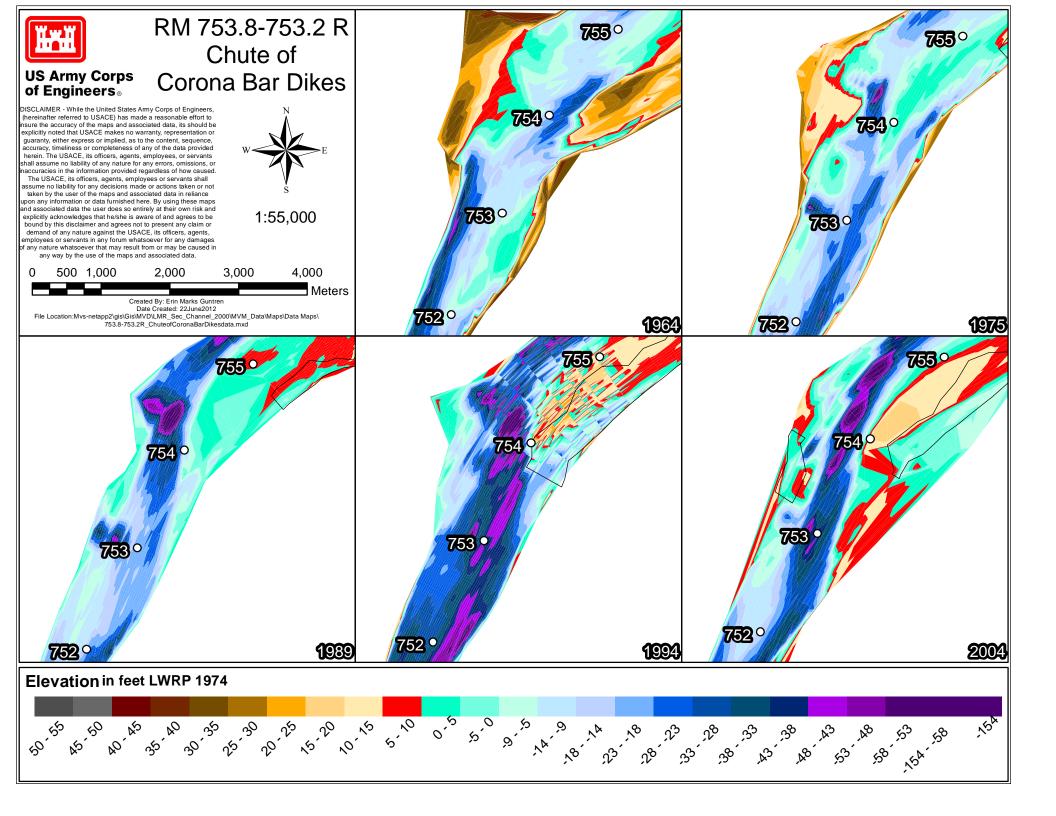


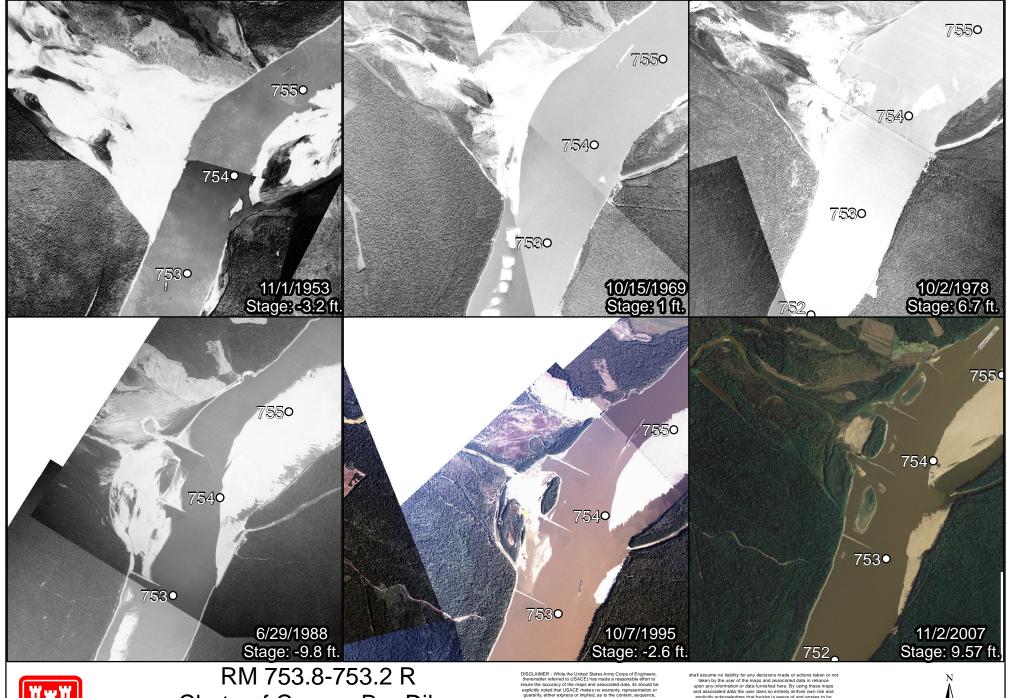
1,250

3,750

2,500

5,000







Chute of Corona Bar Dikes

1:55,000 Distance to gage: 20 river miles

Created by: Erin Marks Guntren Date Created: 27June2012 File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 753.8-753.2R_ChuteofCoronaBarDikesphotos.mxd

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3,600



1,200 2,400 4,800

Appendix E: Reach E – River Miles 750-691 Memphis District

Seventeen secondary channels were identified in Reach E (see below). Only 11 secondary channels were surveyed in all 4 decades and are included in the Reach Summary.

Table E1. Secondary channels and their upstream river mile for Reach E; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute of Poker Point Dikes	749.3R	Chute Opposite Ensley Bar	721.1L	Chute of Porter Lake Dikes	701.8R
Chute of Hickman Bar Dikes	747.8L	Chute 2 of Ensley Bar	718.4R	Chute of Buck Island Dikes	701.0L
Chute of Loosahatchie Bar	742.5R	Chute at Cow Island Bend	716.2L	Chute Opposite Porter Lake Dikes	698.6L
Chute of Loosahatchie Bar Dikes	738.5R	Chute 1 of Cat Island	711.5R	Chute of Basket Bar Dikes	695.0R
Chute of Vice President's Bar	730.6L	Chute 2 Outside Cat Island	707.0R	Chute of Commerce Dikes	693.6L
Chute 1 of Ensley Bar	726.6R	Chute of Pickett Dikes	704.7L		

Reach Summary

Table E2. Sum of Reach E area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)	Volume (yds³)			
Decades	cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	100%	1,410	2,380	3,410	4,350	35,434,000	90,331,000	
1975	99%	1,050	1,830	3,180	4,500	22,787,000	74,060,000	
1994	99%	1,900	2,500	2,900	3,100	43,863,000	90,067,000	
2004	100%	290	670	1,580	3,000	7,334,000	34,301,000	

Table E3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach E. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Cocondon/Channal	River	Year	Cvrg.		Area (A	Acres)	Volume (yd³)		
Secondary Channel	Miles			-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Poker Point Dikes	749.3- 747.9R	1964	100%	10	30	100	180	181,000	1,856,000
Chute of Poker Point Dikes	749.3- 747.9R	1975	100%	10	40	60	100	200,000	1,241,000
Chute of Poker Point Dikes	749.3- 747.9R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Poker Point Dikes	749.3- 747.9R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Poker Point Dikes	749.3- 747.9R	2004	20%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hickman Bar Dikes	747.8- 743.1L	1964	100%	90	250	480	670	1,783,000	9,501,000
Chute of Hickman Bar Dikes	747.8- 743.1L	1975	100%	20	70	270	510	616,000	5,063,000
Chute of Hickman Bar Dikes	747.8- 743.1L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hickman Bar Dikes	747.8- 743.1L	1994	100%	350	440	480	490	7,698,000	15,369,000
Chute of Hickman Bar Dikes	747.8- 743.1L	2004	100%	40	80	190	400	1,233,000	4,614,000
Chute of Loosahatchie Bar	742.5- 737.5R	1964	100%	260	440	780	1,130	6,134,000	18,688,000
Chute of Loosahatchie Bar	742.5- 737.5R	1975	60%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Loosahatchie Bar	742.5- 737.5R	1989	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Loosahatchie Bar	742.5- 737.5R	1994	90%	620	750	800	820	15,316,000	28,197,000
Chute of Loosahatchie Bar	742.5- 737.5R	2004	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Loosahatchie Bar Dikes	738.5- 737.4R	1964	100%	0	0	0	0	0	0
Chute of Loosahatchie Bar Dikes	738.5- 737.4R	1975	100%	0	0	10	30	3,000	192,000
Chute of Loosahatchie Bar Dikes	738.5- 737.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Secondary Channel	River	Year	Cvrg.		Area (A	Acres)	Volume (yd³)		
Secondary Channel	Miles			-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Loosahatchie Bar Dikes	738.5- 737.4R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Loosahatchie Bar Dikes	738.5- 737.4R	2004	100%	0	0	0	0	0	0
Chute of Vice President's Bar	730.6- 729.3L	1964	100%	0	0	10	50	6,000	263,000
Chute of Vice President's Bar	730.6- 729.3L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Vice President's Bar	730.6- 729.3L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Vice President's Bar	730.6- 729.3L	1994	100%	0	0	0	0	0	0
Chute of Vice President's Bar	730.6- 729.3L	2004	100%	0	0	10	70	0	333,000
Chute 1 of Ensley Bar	726.6- 717.4R	1964	100%	890	1,230	1,570	1,890	23,735,00	49,085,000
Chute 1 of Ensley Bar	726.6- 717.4R	1975	100%	210	410	810	1,150	4,473,000	17,338,000
Chute 1 of Ensley Bar	726.6- 717.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Ensley Bar	726.6- 717.4R	1994	100%	800	1,050	1,180	1,220	17,092,000	35,912,000
Chute 1 of Ensley Bar	726.6- 717.4R	2004	100%	20	80	320	770	427,000	6,298,000
Chute Opposite Ensley Bar	721.1- 720.2L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Opposite Ensley Bar	721.1- 720.2L	1975	100%	80	90	110	130	1,870,000	3,721,000
Chute Opposite Ensley Bar	721.1- 720.2L	1989	100%	0	0	0	0	0	0
Chute Opposite Ensley Bar	721.1- 720.2L	1994	100%	0	0	0	0	0	0
Chute Opposite Ensley Bar	721.1- 720.2L	2004	100%	0	0	0	0	0	0
Chute 2 of Ensley Bar	718.4- 717.4R	1964	100%	0	0	0	0	0	0
Chute 2 of Ensley Bar	718.4- 717.4R	1975	100%	90	130	160	190	1,486,000	4,079,000
Chute 2 of Ensley Bar	718.4- 717.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Secondary Channel	River	Year	Cvrg.		Area (A	Acres)	Volume (yd³)		
Secondary Channel	Miles	IGai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 2 of Ensley Bar	718.4- 717.4R	1994	100%	70	80	90	90	1,877,000	3,246,000
Chute 2 of Ensley Bar	718.4- 717.4R	2004	100%	726.6R	726.6 R	726.6 R	726.6 R	726.6R	726.6R
Chute at Cow Island Bend	716.2- 715.3L	1964	100%	0	0	0	0	0	0
Chute at Cow Island Bend	716.2- 715.3L	1975	100%	140	190	240	400	3,757,000	7,906,000
Chute at Cow Island Bend	716.2- 715.3L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Cow Island Bend	716.2- 715.3L	1994	90%	110	130	150	200	3,721,000	6,273,000
Chute at Cow Island Bend	716.2- 715.3L	2004	100%	0	0	0	0	0	0
Chute 1 of Cat Island	711.5- 704.7R	1964	100%	370	670	920	1,170	8,489,000	23,280,000
Chute 1 of Cat Island	711.5- 704.7R	1975	100%	130	270	520	720	3,125,000	11,359,000
Chute 1 of Cat Island	711.5- 704.7R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Cat Island	711.5- 704.7R	1994	95%	360	510	620	700	7,578,000	17,493,000
Chute 1 of Cat Island	711.5- 704.7R	2004	100%	40	110	350	640	1,076,000	6,767,000
Chute 2 Outside Cat Island	707- 706.1R	1964	100%	0	0	0	0	0	0
Chute 2 Outside Cat Island	707- 706.1R	1975	100%	0	30	70	80	105,000	1,162,000
Chute 2 Outside Cat Island	707- 706.1R	1989	100%	0	0	0	0	0	0
Chute 2 Outside Cat Island	707- 706.1R	1994	100%	0	0	0	0	0	0
Chute 2 Outside Cat Island	707- 706.1R	2004	100%	0	0	0	0	0	0
Chute of Pickett Dikes	704.7- 701.9L	1964	100%	20	40	60	80	382,000	1,297,000
Chute of Pickett Dikes	704.7- 701.9L	1975	100%	70	130	280	400	2,144,000	6,630,000
Chute of Pickett Dikes	704.7- 701.9L	1989	100%	0	0	70	90	2,000	954,000
Chute of Pickett Dikes	704.7- 701.9L	1994	100%	0	0	0	0	0	0

Secondary Channel	River	Year	Cvrg.		Area (/	Acres)	Volume (yd³)		
2300 Tadin of Charles	Miles	IEai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Pickett Dikes	704.7- 701.9L	2004	100%	40	90	220	430	692,000	4,558,000
Chute of Porter Lake Dikes	701.8- 696.1R	1964	100%	0	0	0	0	0	0
Chute of Porter Lake Dikes	701.8- 696.1R	1975	100%	100	170	290	370	1,755,000	6,258,000
Chute of Porter Lake Dikes	701.8- 696.1R	1989	80%	190	290	480	550	4,787,000	11,974,000
Chute of Porter Lake Dikes	701.8- 696.1R	1994	100%	200	270	350	390	5,796,000	11,305,000
Chute of Porter Lake Dikes	701.8- 696.1R	2004	100%	150	300	480	740	3,900,000	11,921,000
Chute of Buck Island Dikes	701- 699.7L	1964	100%	0	10	60	110	72,000	1,043,000
Chute of Buck Island Dikes	701- 699.7L	1975	100%	0	0	0	0	0	0
Chute of Buck Island Dikes	701- 699.7L	1989	100%	0	0	0	0	0	0
Chute of Buck Island Dikes	701- 699.7L	1994	100%	0	0	0	0	0	0
Chute of Buck Island Dikes	701- 699.7L	2004	100%	0	0	0	0	0	0
Chute Opposite Porter Lake Dikes	698.6- 696.1L	1964	100%	10	60	120	170	350,000	2,208,000
Chute Opposite Porter Lake Dikes	698.6- 696.1L	1975	100%	270	390	470	530	4,930,000	12,447,000
Chute Opposite Porter Lake Dikes	698.6- 696.1L	1989	100%	0	0	0	0	0	0
Chute Opposite Porter Lake Dikes	698.6- 696.1L	1994	100%	0	0	0	0	0	0
Chute Opposite Porter Lake Dikes	698.6- 696.1L	2004	100%	0	0	0	0	0	0
Chute of Basket Bar Dikes	695- 694.4R	1964	100%	20	120	210	270	623,000	3,916,000
Chute of Basket Bar Dikes	695- 694.4R	1975	90%	30	50	80	140	396,000	1,819,000
Chute of Basket Bar Dikes	695- 694.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Basket Bar Dikes	695- 694.4R	1994	100%	10	10	20	30	102,000	468,000
Chute of Basket Bar Dikes	695- 694.4R	2004	100%	0	0	10	20	5,000	142,000

Secondary Channel	River Year		Year Cvrg.	Area (Acres)				Volume (yd3)	
Secondary Charmer	Miles	Icai	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Commerce Dikes	693.6- 692.7L	1964	100%	30	80	110	160	509,000	2,336,000
Chute of Commerce Dikes	693.6- 692.7L	1975	100%	0	0	0	0	0	0
Chute of Commerce Dikes	693.6- 692.7L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Commerce Dikes	693.6- 692.7L	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Commerce Dikes	693.6- 692.7L	2004	100%	0	0	0	0	0	0

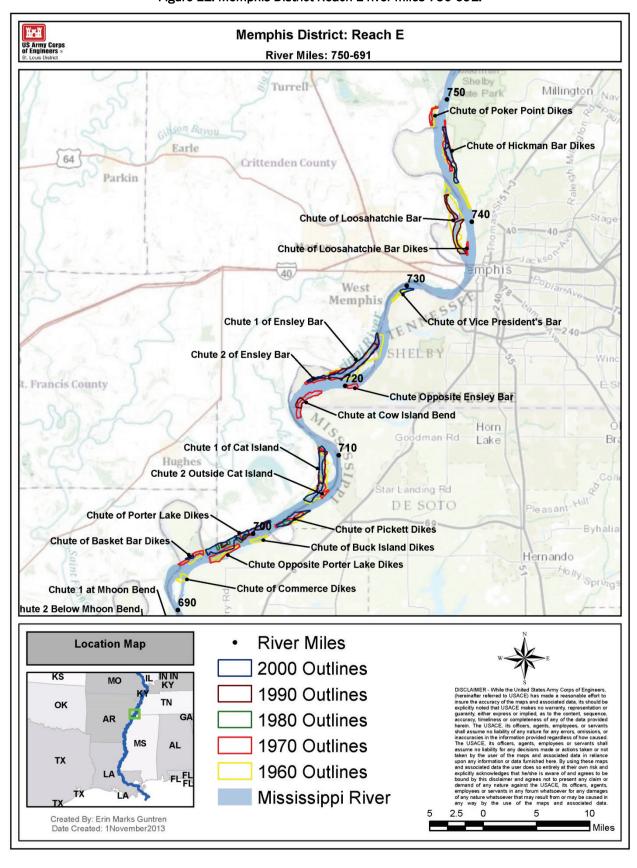
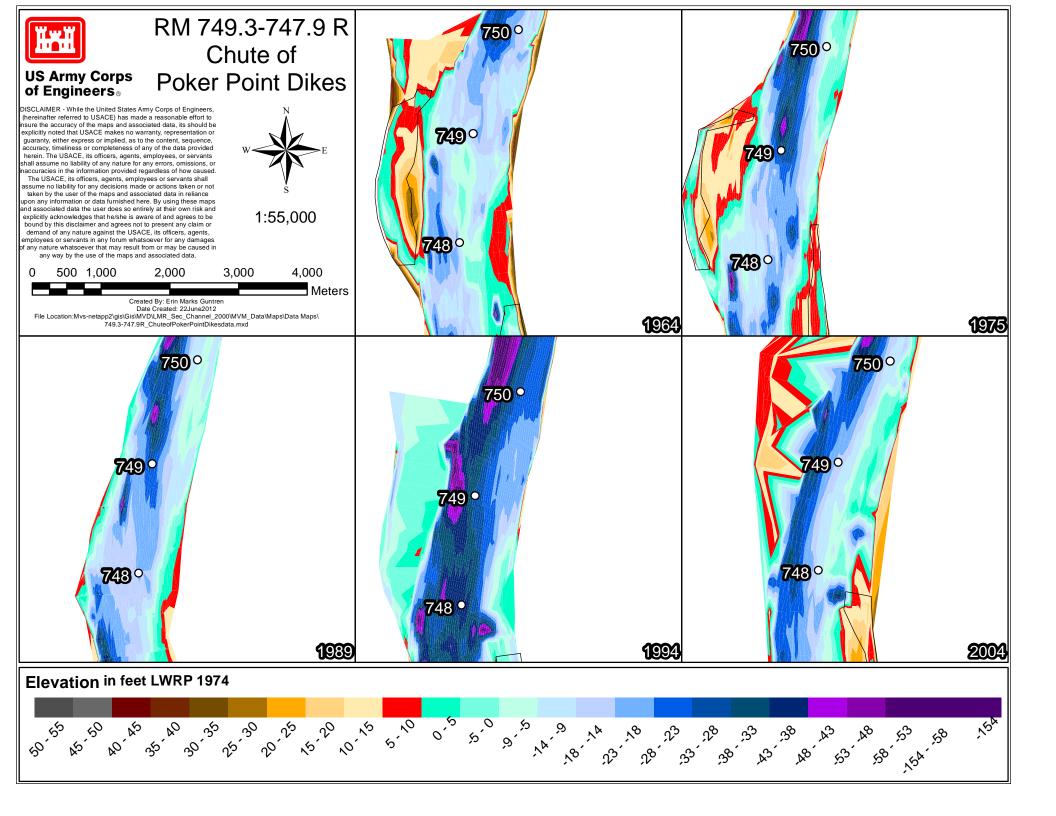
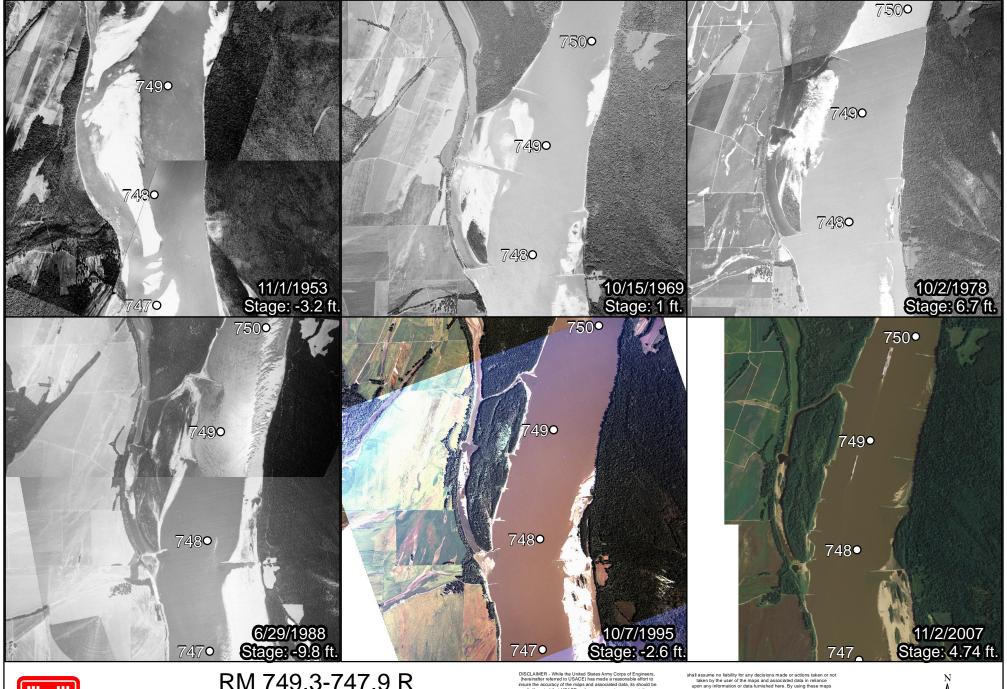


Figure E1. Memphis District Reach E river miles 750-691.







RM 749.3-747.9 R Chute of Poker Point Dikes

1:55,000 Distance to gage: 14 river miles

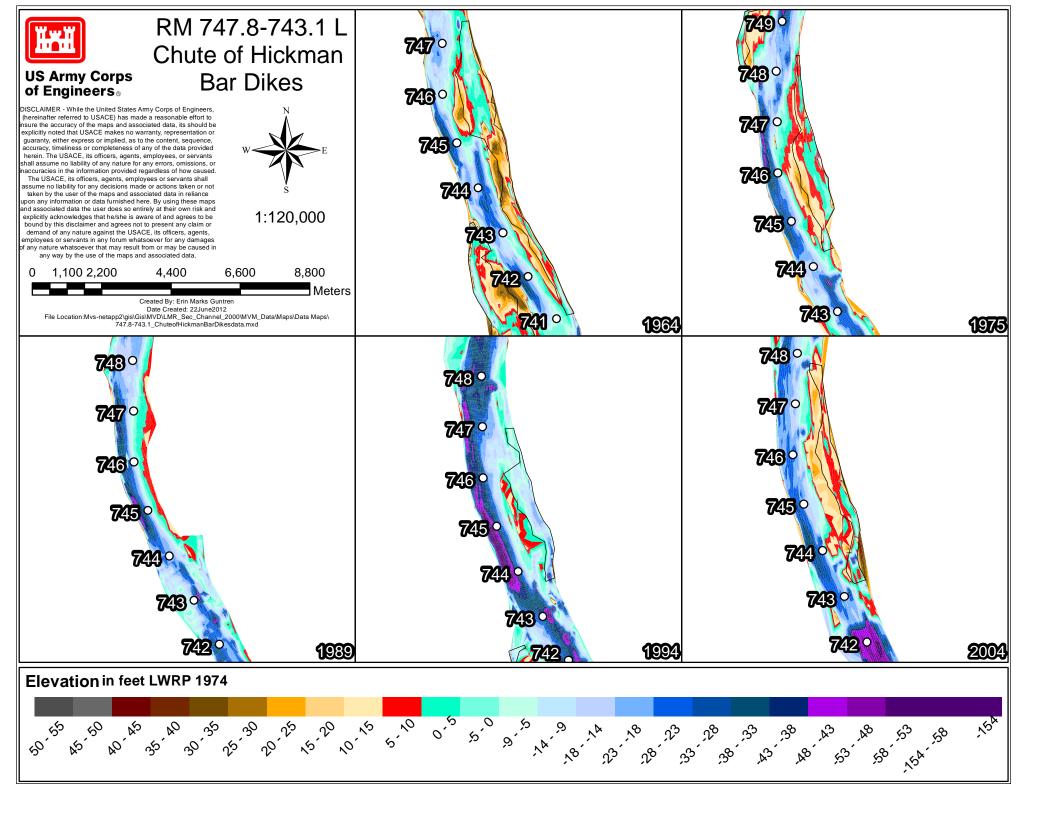
Created by: Erin Marks Guntren
Date Created: 28June2012
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749.3-747.9R_ChuteofPokerPointDikesphotos.mxd

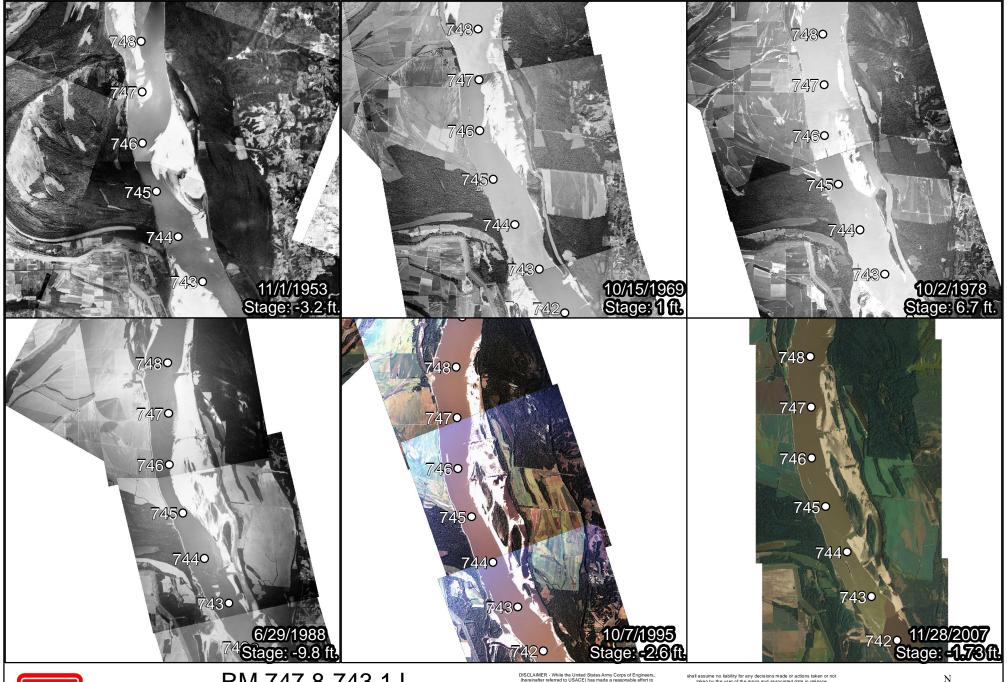
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shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in relaince upon any information or data furnhand here. By using hese in approximation of the state of



600 1,200 2,400 3,600 4,800







RM 747.8-743.1 L Chute of Hickman Bar Dikes

1:120,000 Distance to gage: 10 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
747.8-743.1_ChuteofHickmanBarDikesphotos.mxd

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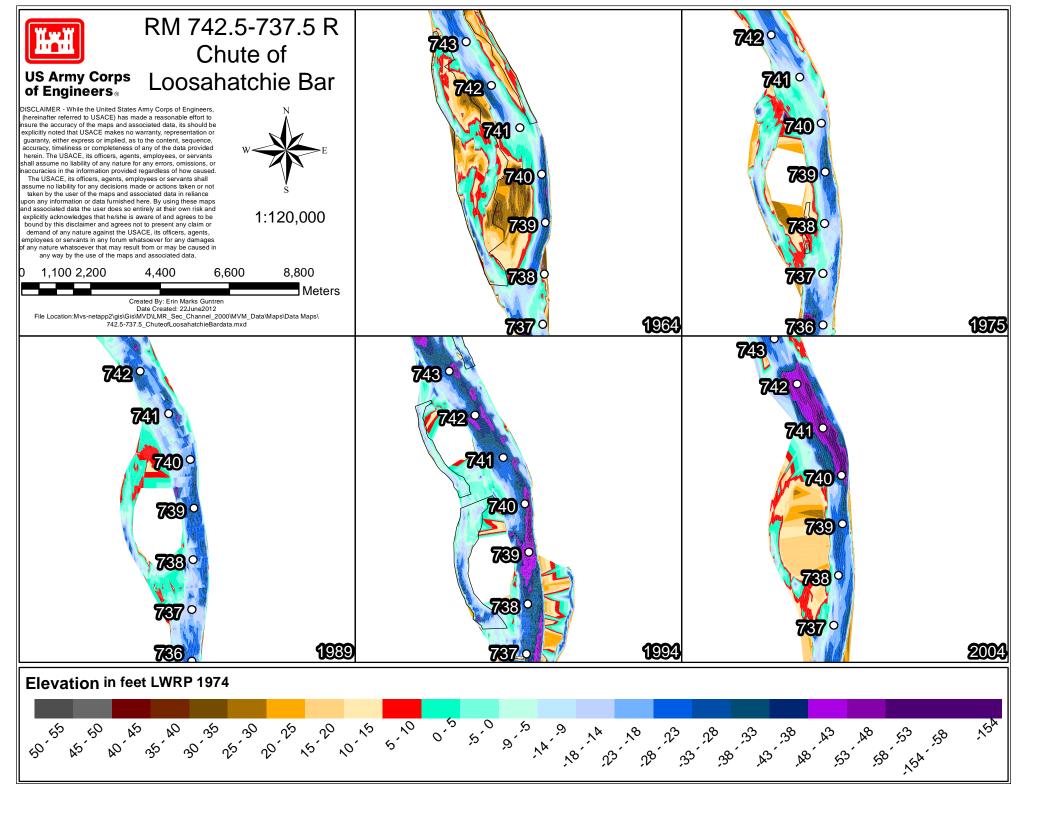


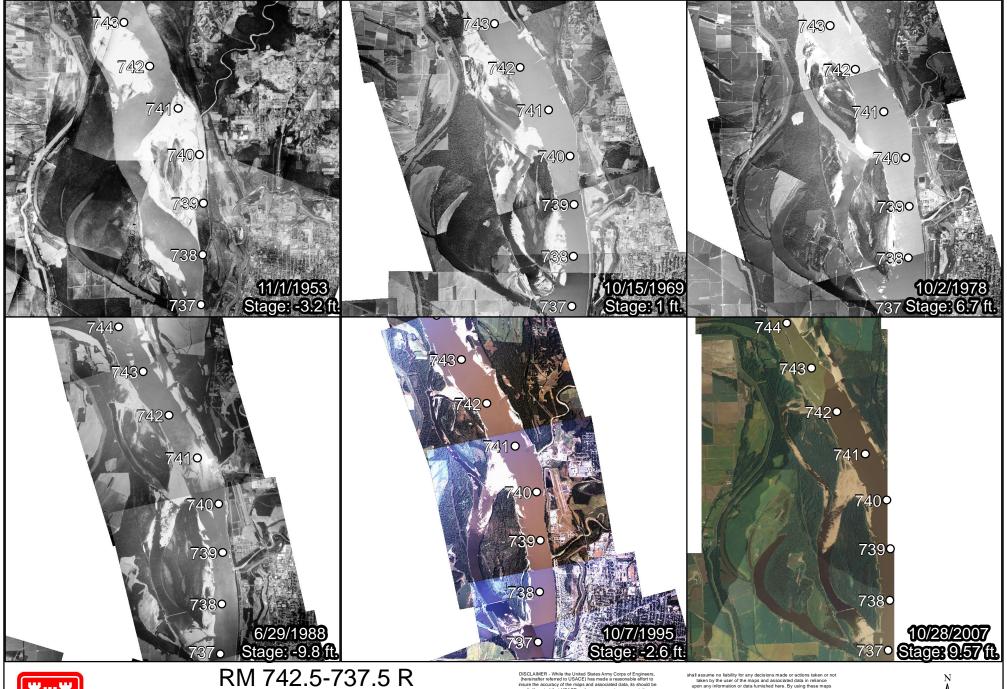
0 1,375 2,750

5,500

8,250

11,000







Chute of Loosahatchie Bar

1:120,000 Distance to gage: 6 river miles

Created by: Erin Marks Guntren
Date Created: 27June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 742.5-737.5R ChuteofLoosahatchieBarphotos.mxd

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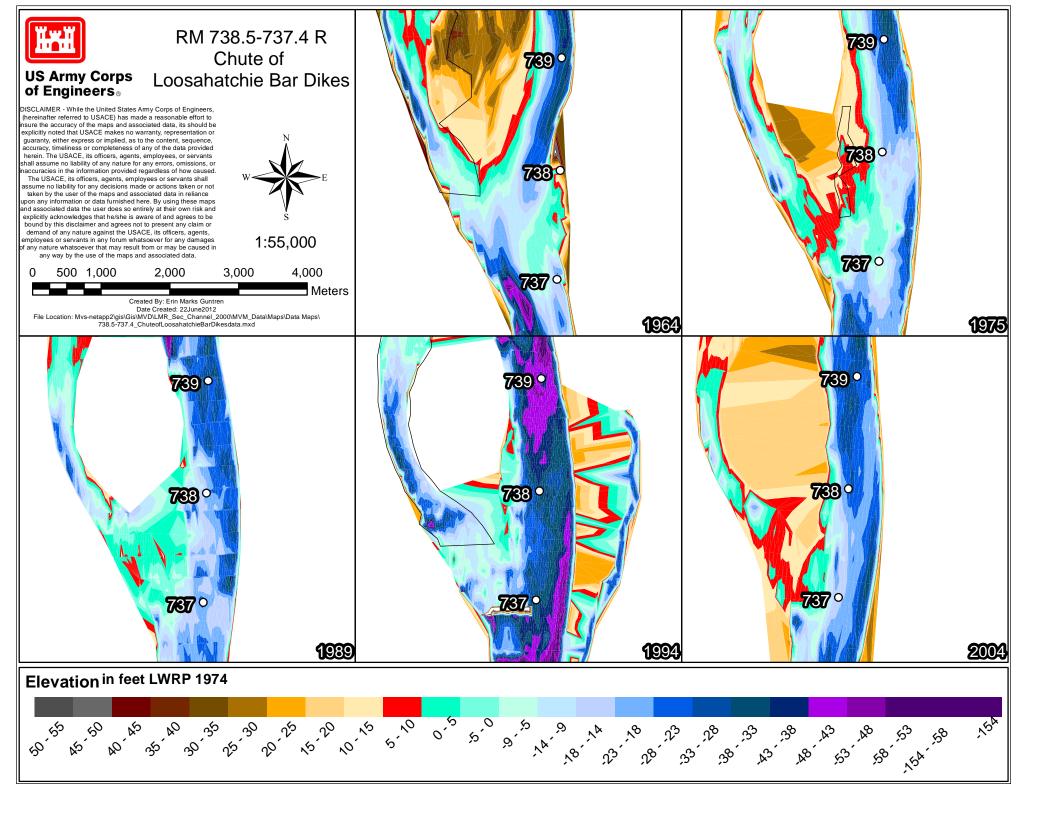


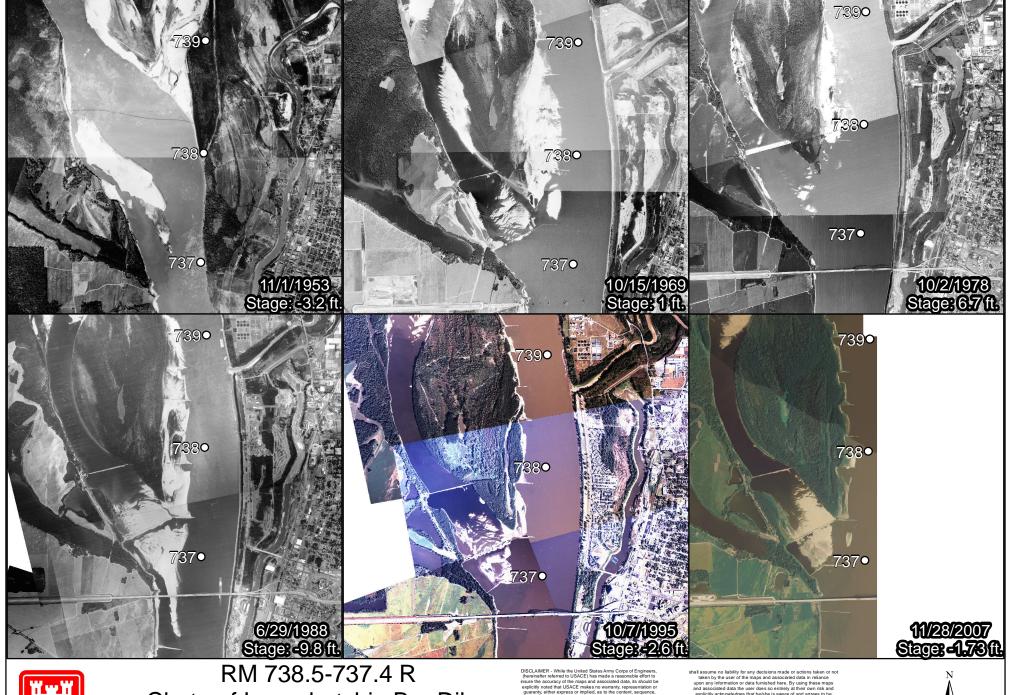
1,375 2,750

5,500

8,250

11,000





US Army Corps of Engineers®

Chute of Loosahatchie Bar Dikes

1:55,000 Distance to gage: 35 river miles

Created by: Erin Marks Guntrer Date Created: 28June2012 File Path: Mvs-netapp2\qis\Gis\MVD\LMR Sec Channel 2000\MVM Data\Maps\Data Maps\ 738.5-737.4R ChuteofLoosahatchieBarDikesphotos.mxd

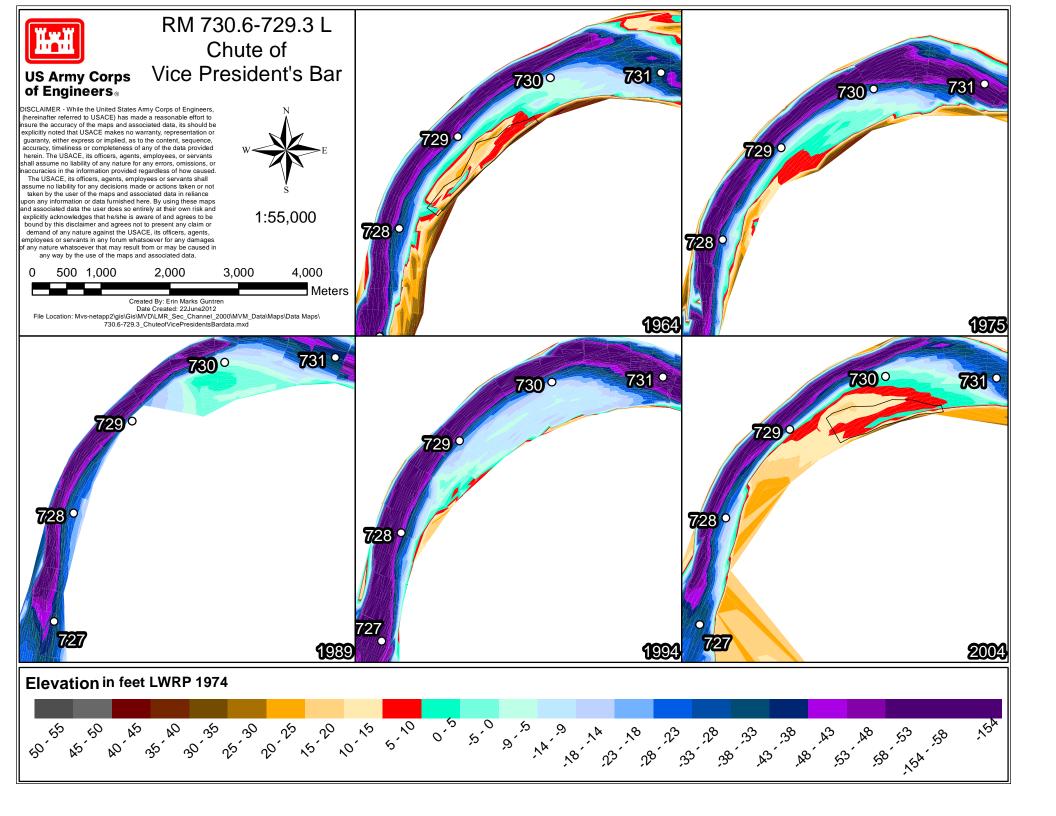
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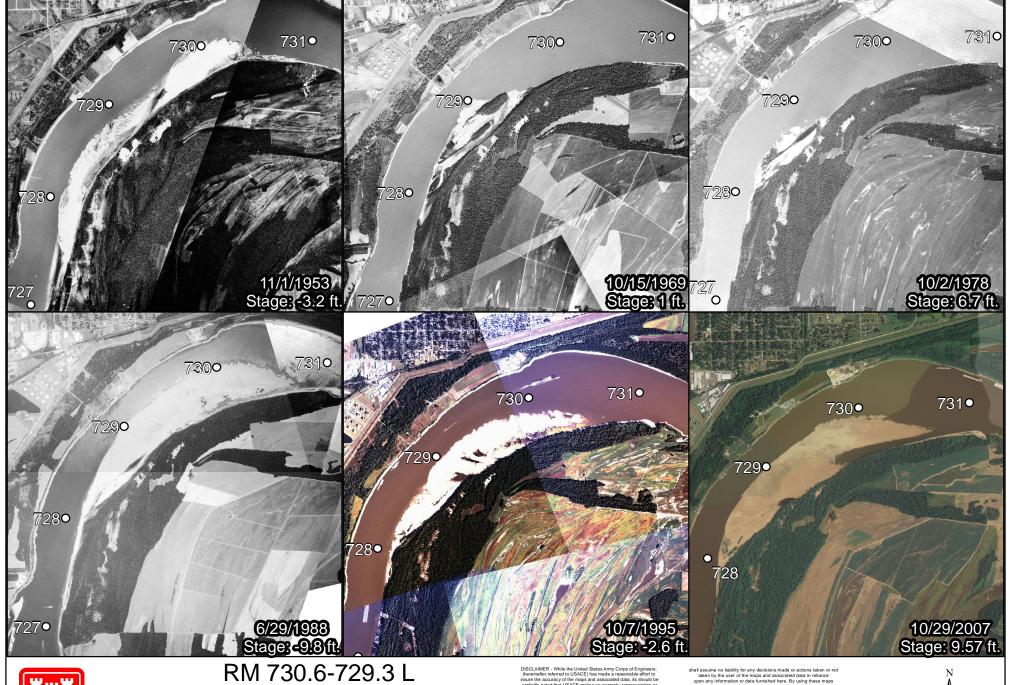
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1,200

2,400 3,600 4,800







RM 730.6-729.3 L Chute of Vice Presidents Bar

1:55,000 Distance to gage: 4 river miles

Created by: Erin Marks Guntren

Created by: Erin Marks Guntren
Date Created: 28June2012
File Path:Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
730.6-729.3L_ChuteofVicePresidentsBarphotos.mxd

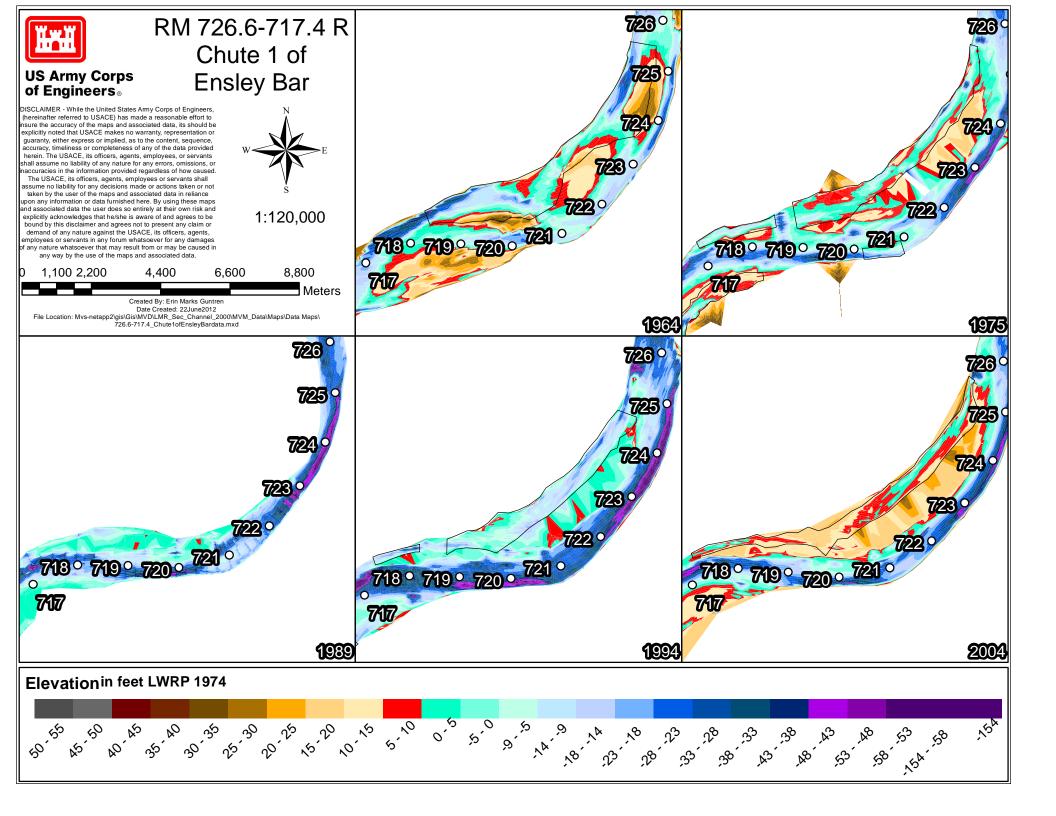
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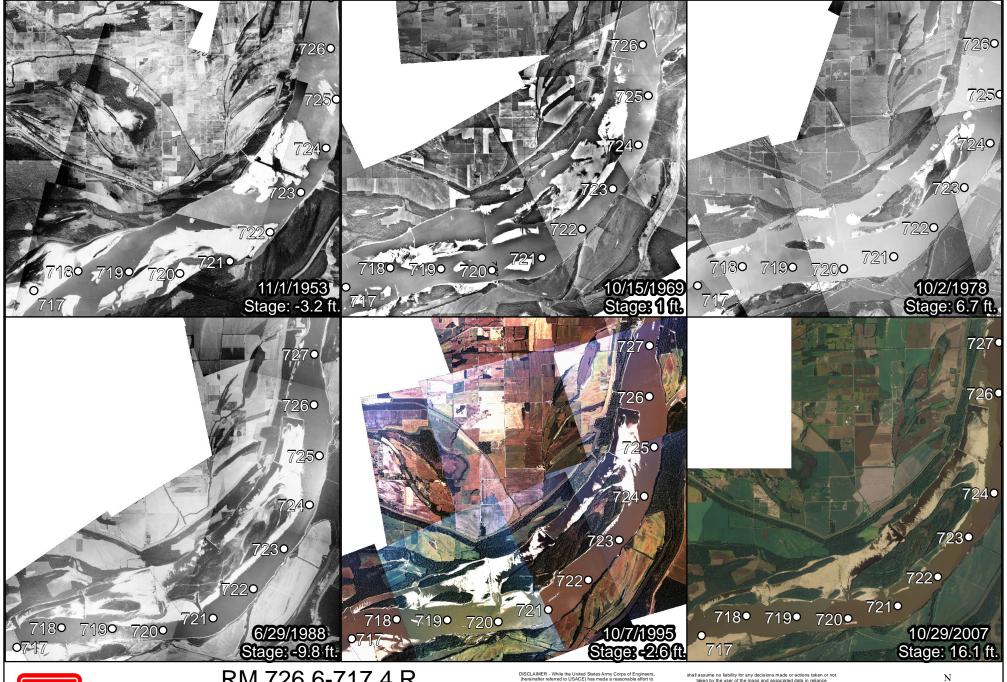
shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data is relained upon any information or data furnhand here. By using these maps of the state o



600 1,200 2,400

3,600 4,800







RM 726.6-717.4 R Chute 1 of Ensley Bar

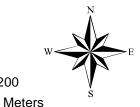
1:120,000 Distance to gage: 13 river miles

Date Created: 28June2012
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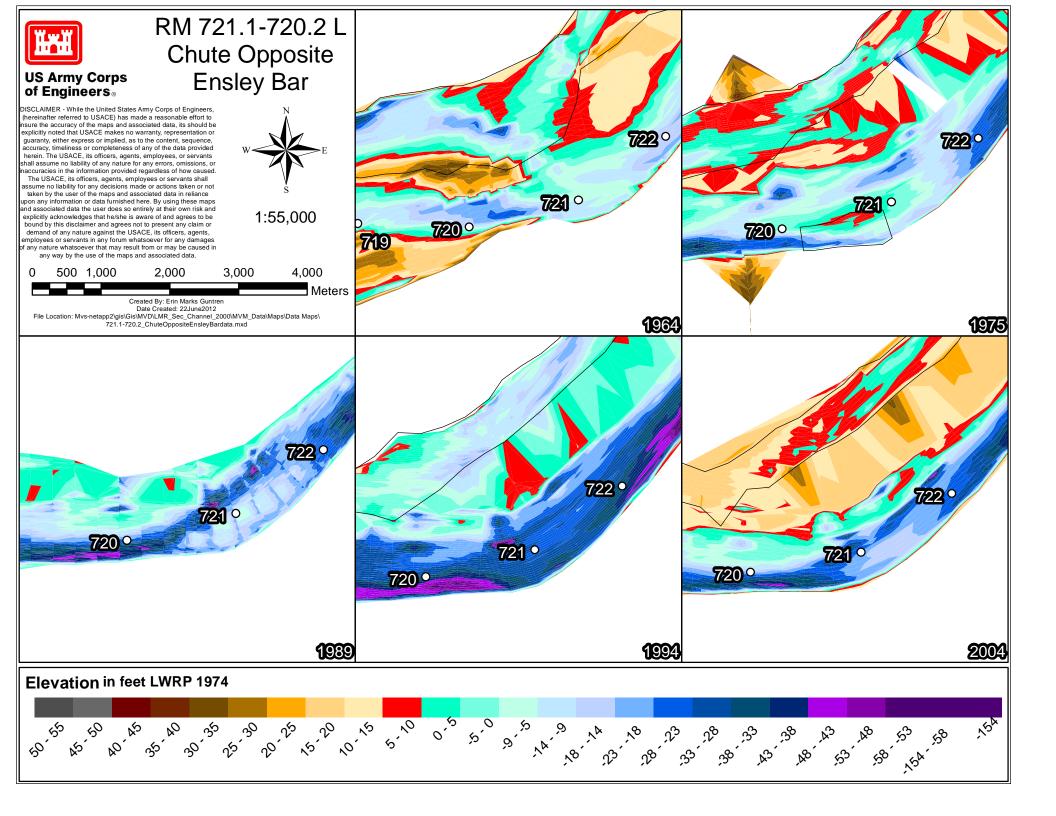
8,400

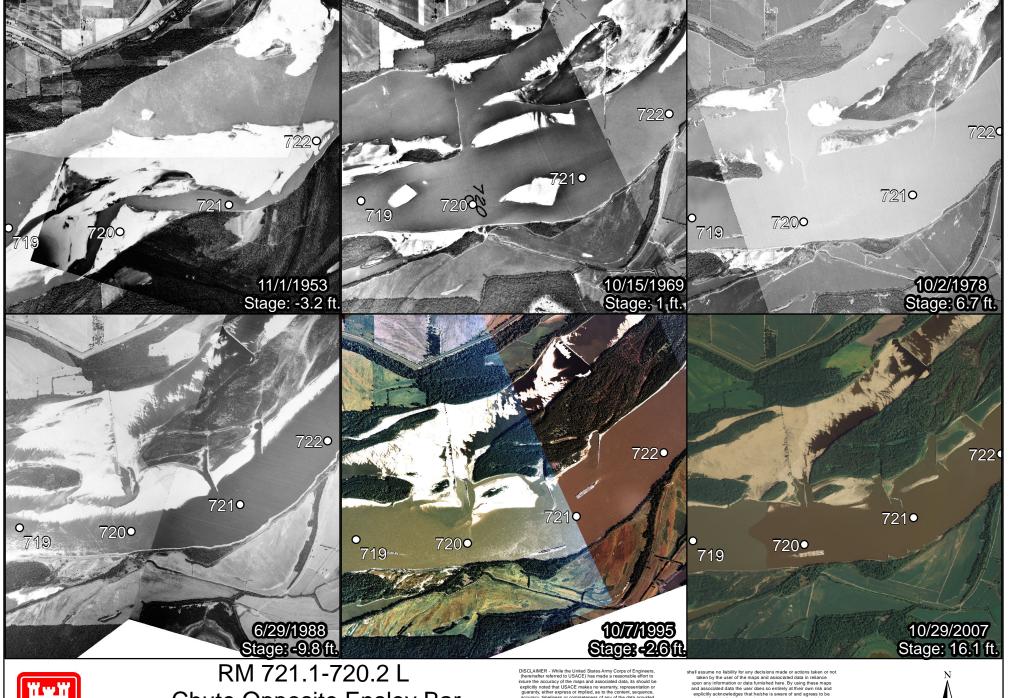


1,400 2,800

5,600

11,200







Chute Opposite Ensley Bar

1:55,000 Distance to gage: 14 river miles

Created by: Erin Marks Guntrer Date Created: 28June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\WVM_Data\Maps\Data Maps\ 721.1-720.2L_ChuteOppositeEnsleyBarphotos.mxd

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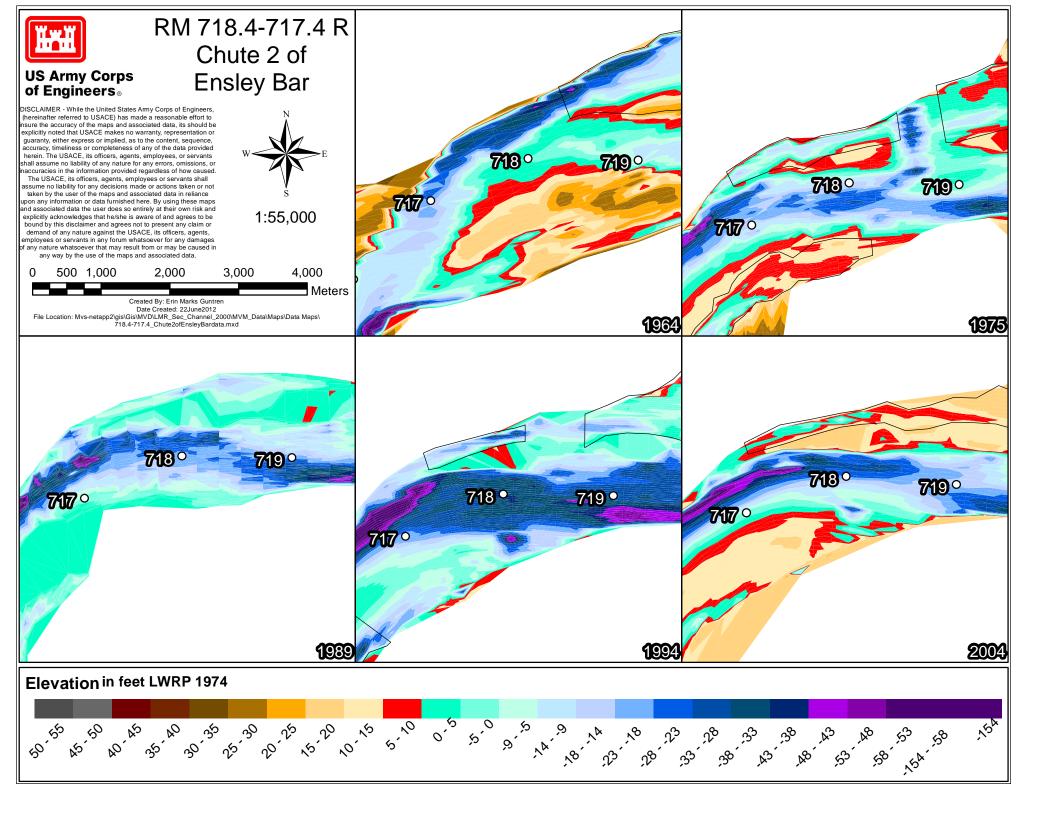
3,750

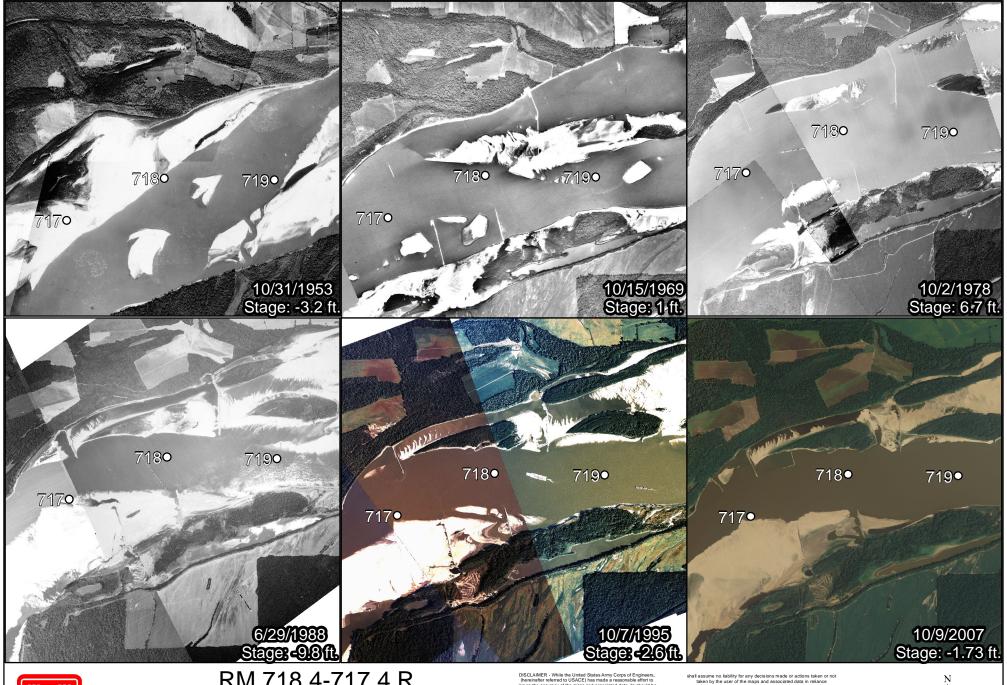


1,250

2,500

5,000







RM 718.4-717.4 R Chute 2 of Ensley Bar

1:55,000 Distance to gage: 14 river miles

Created by: Erin Marks Guntren
Date Created: 28June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
718.4-717.4R_Chute2ofEnsleyBarphotos.mxd

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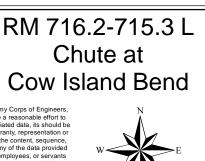


600 1,200 2,400 3,600

4,800

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716°

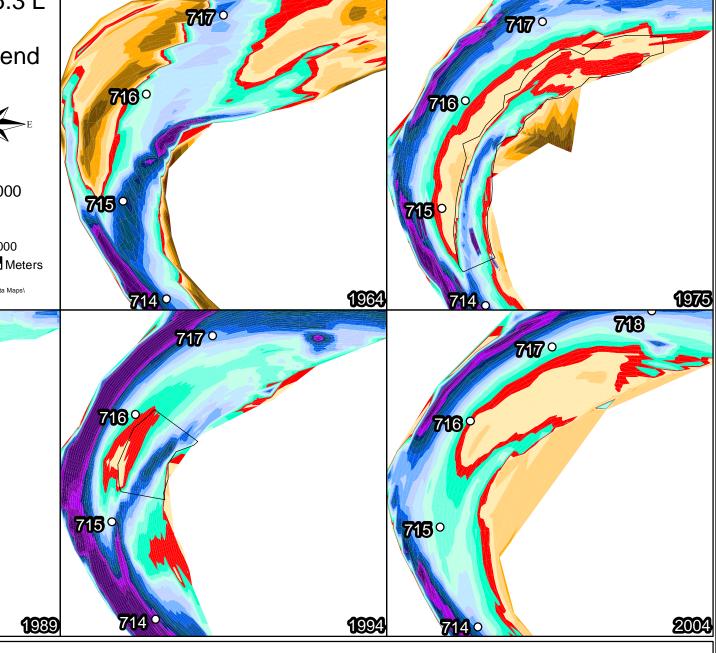


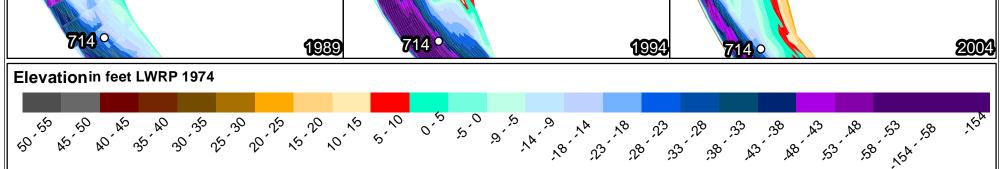


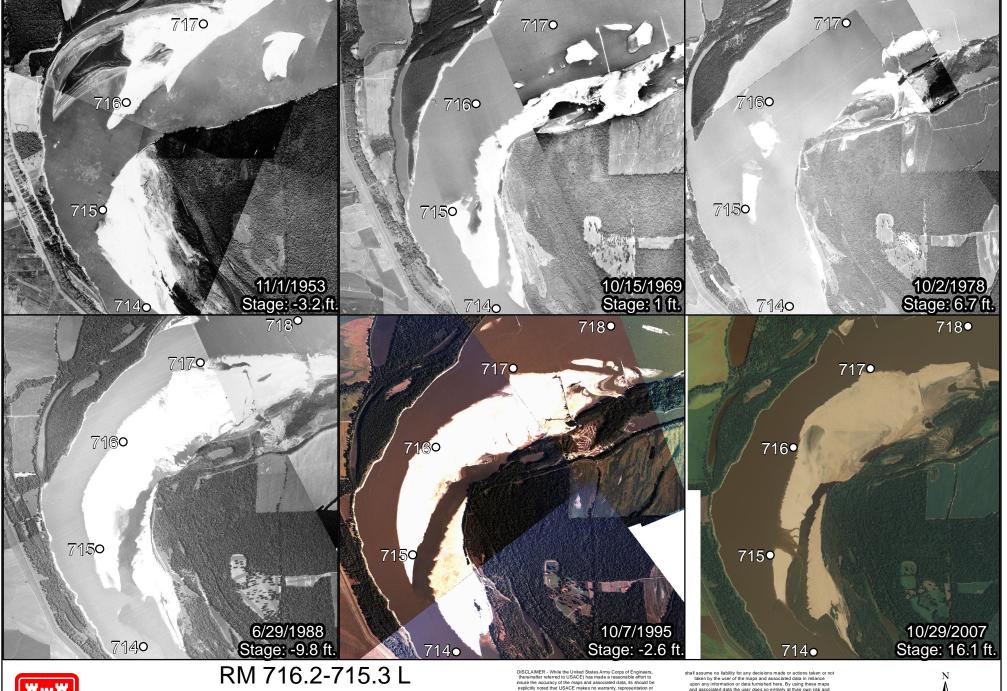
1:55,000

4,000

3,000









Chute at Cow Island Bend

1:55,000 Distance to gage: 18 river miles

Created by: Erin Marks Guntren Cleated by: Lim walks Gorified
Date Created: 28.June2012
File Path: Mvs-netapp2\sis\Gis\Univolume_18.Sec_Channel_2000\WVM_Data\Maps\Data Maps\
716.2-715.3_C\nuture ChuelactCowlsland&Bendphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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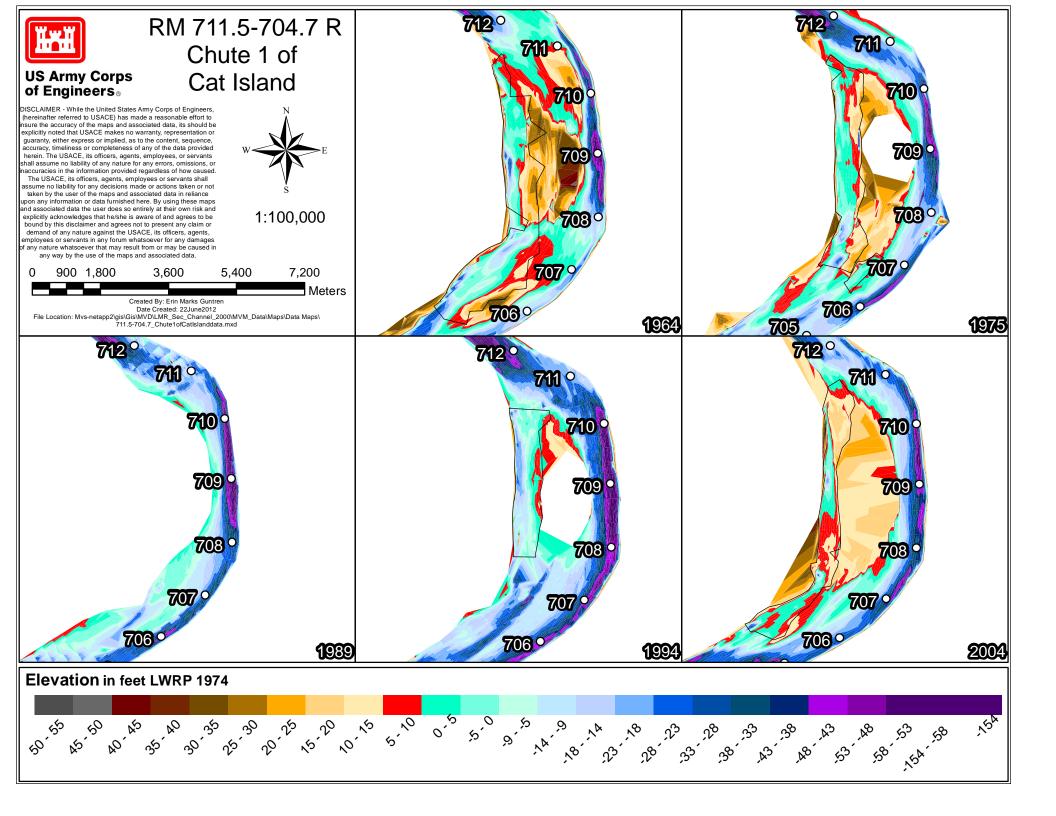


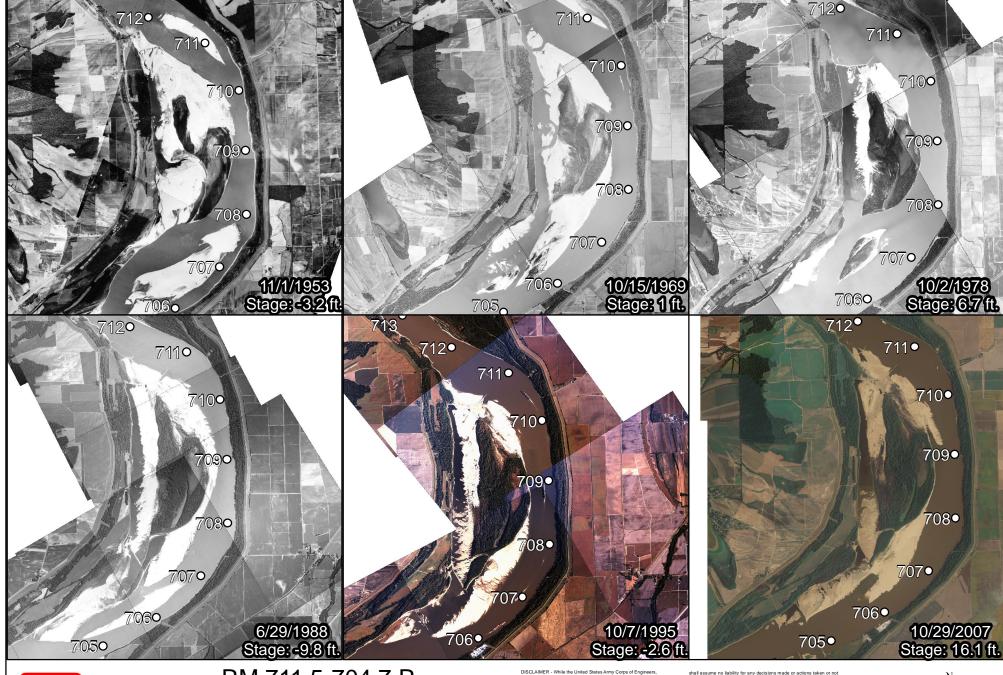
1,250

2,500

3,750

5,000







RM 711.5-704.7 R Chute 1 of Cat Island

1:100,000 Distance to gage: 25 river miles

Created by: Erin Marks Guntren
Date Created: 28June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
711.5-704.7R_Chute1at\CatIslandBendphotos.mxd

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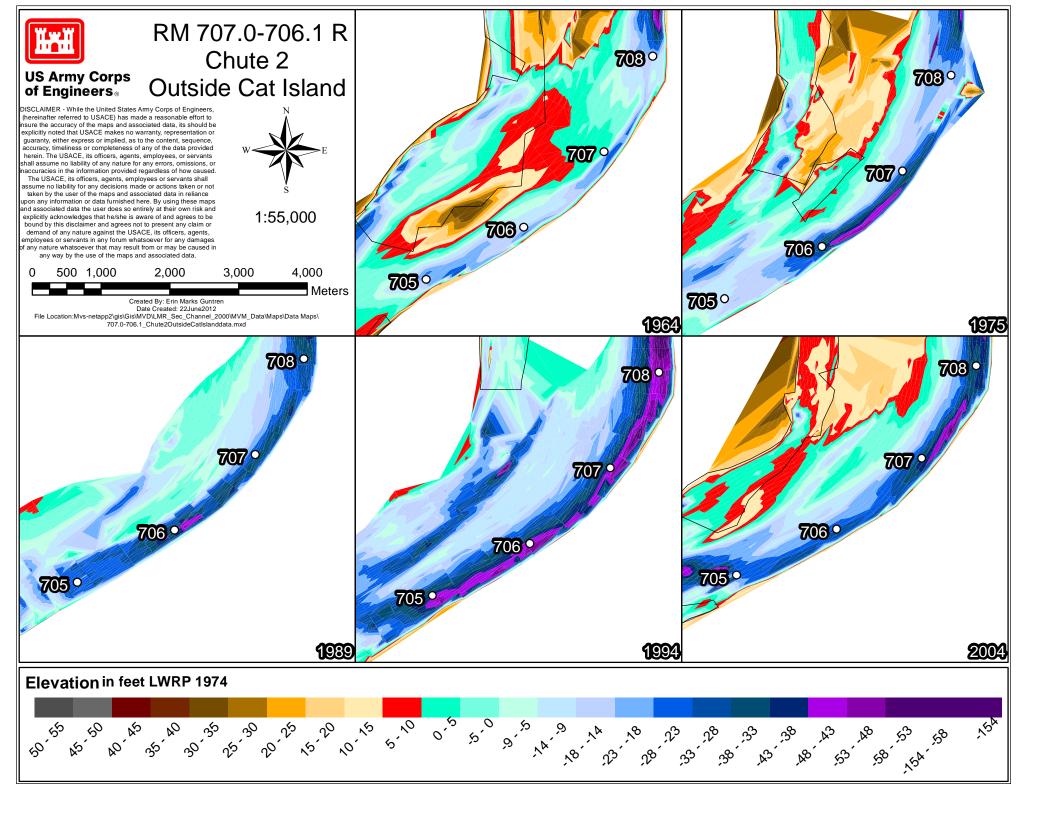


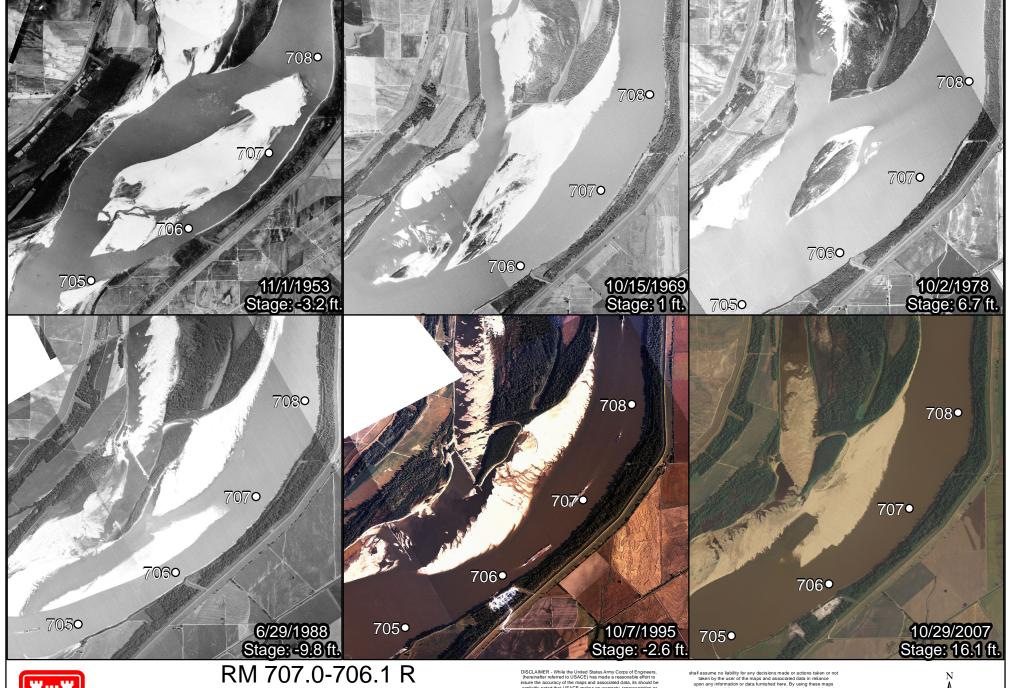
0 1,125 2,250

4,500

6,750

9,000







Chute 2 Outside Cat Island

1:55,000 Distance to gage: 27 river miles

Created by: Erin Marks Guntren

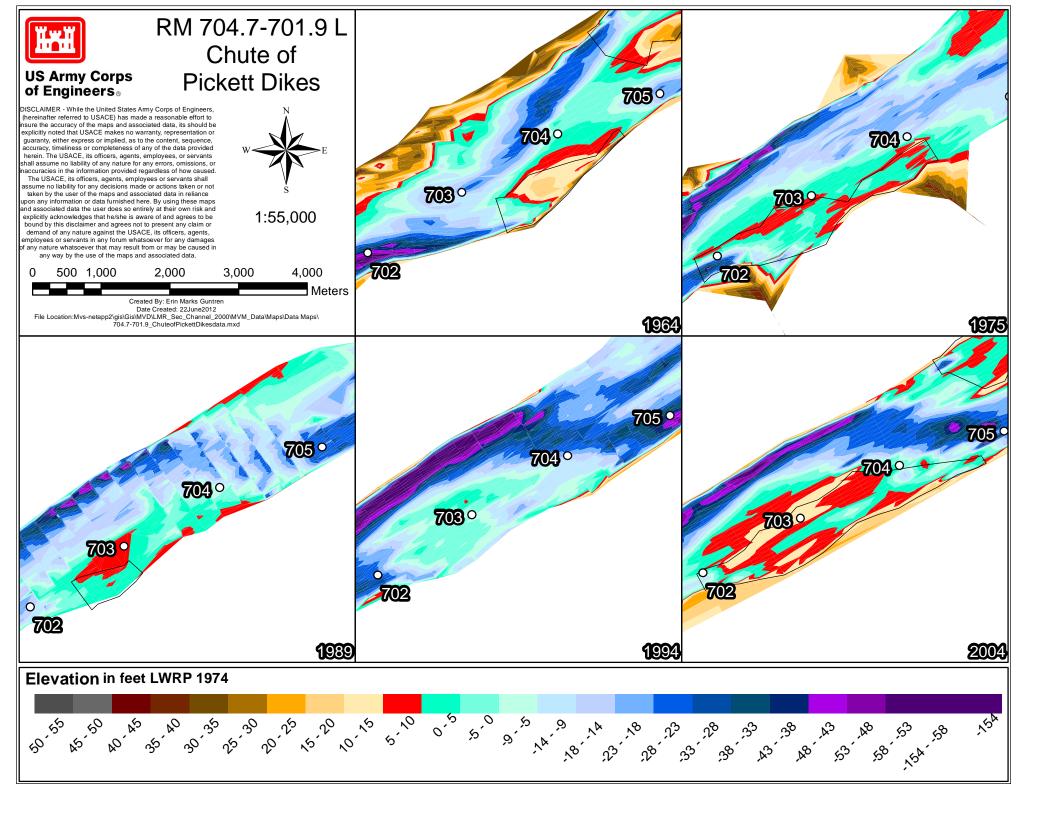
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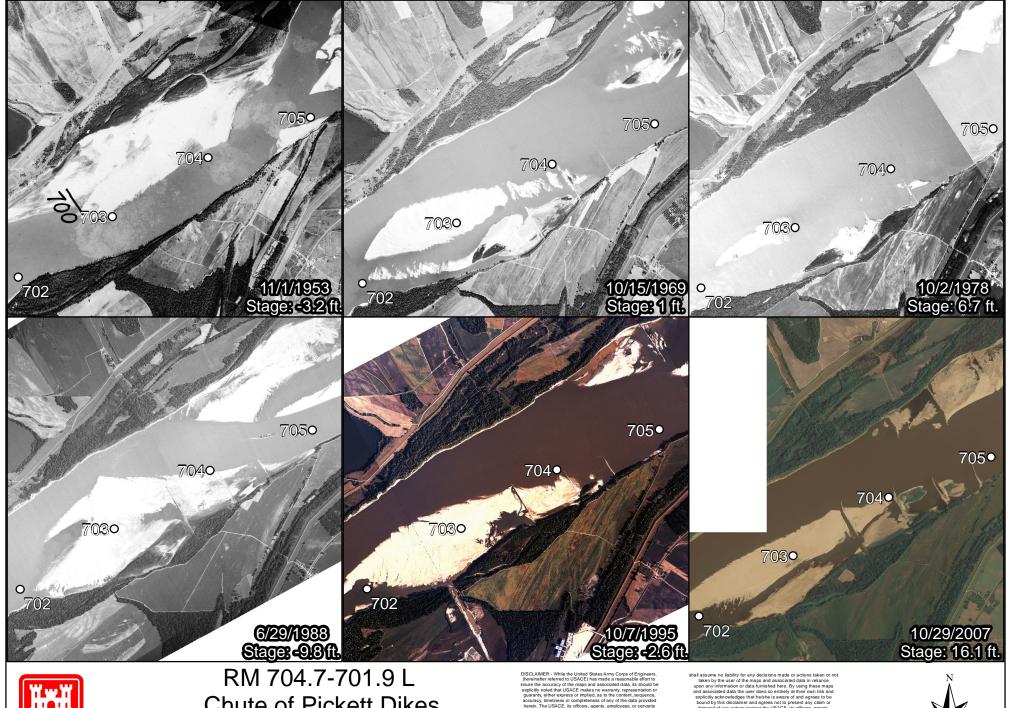
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2,400 4,800 1,200 3,600







Chute of Pickett Dikes

1:55,000 Distance to gage: 31 river miles

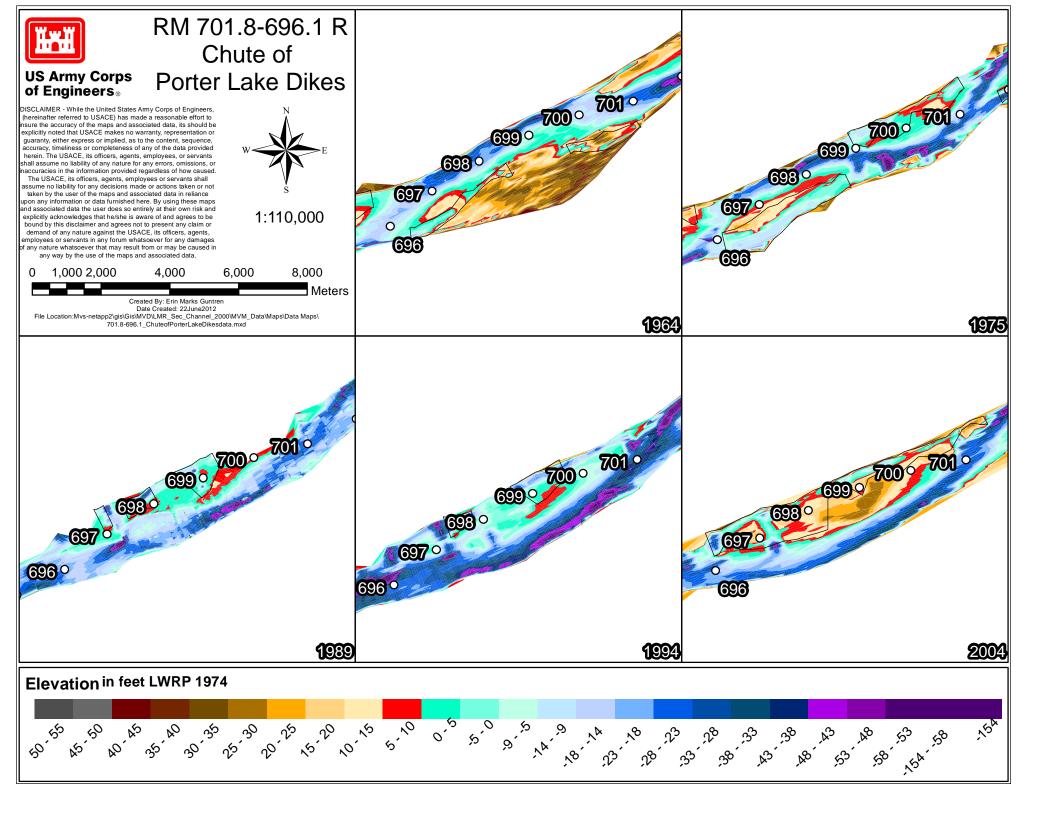
Created by: Erin Marks Guntren Date Created: 28June2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 704.7-701.9L_ChuteofPickettDikesphotos.mxd

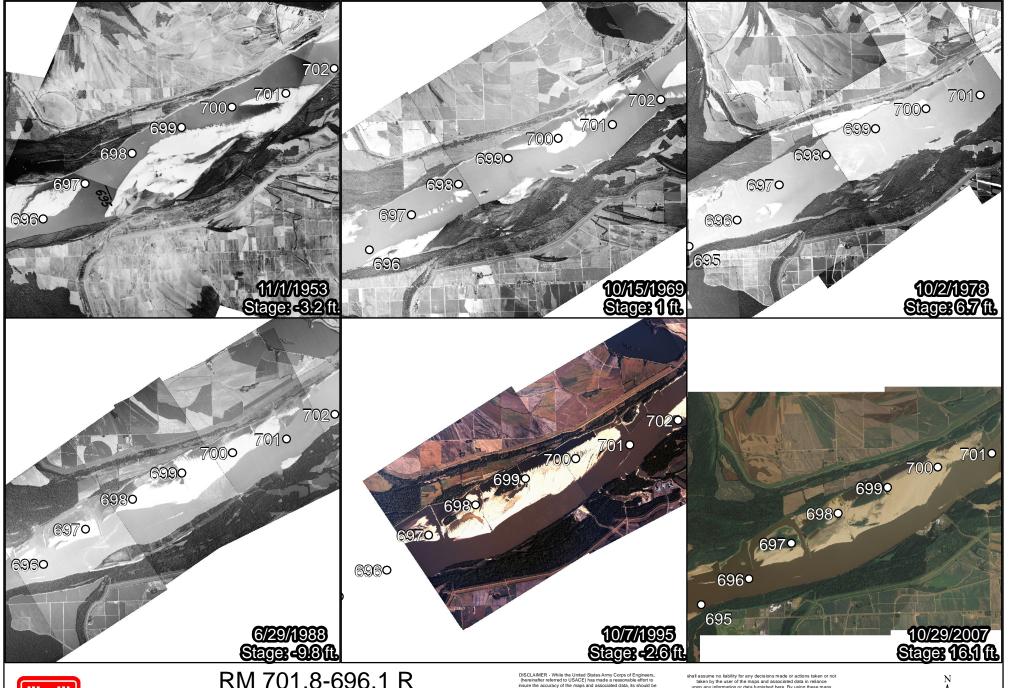
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2,400 4,800 1,200 3,600







RM 701.8-696.1 R Chute of Porter Lake Dikes

1:110,000 Distance to gage: 35 river miles

Created by: Erin Marks Guntren
Date Created: 28June2012
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
701.8-696.1R_ChuteofPorterLakeDikesphotos.mxd

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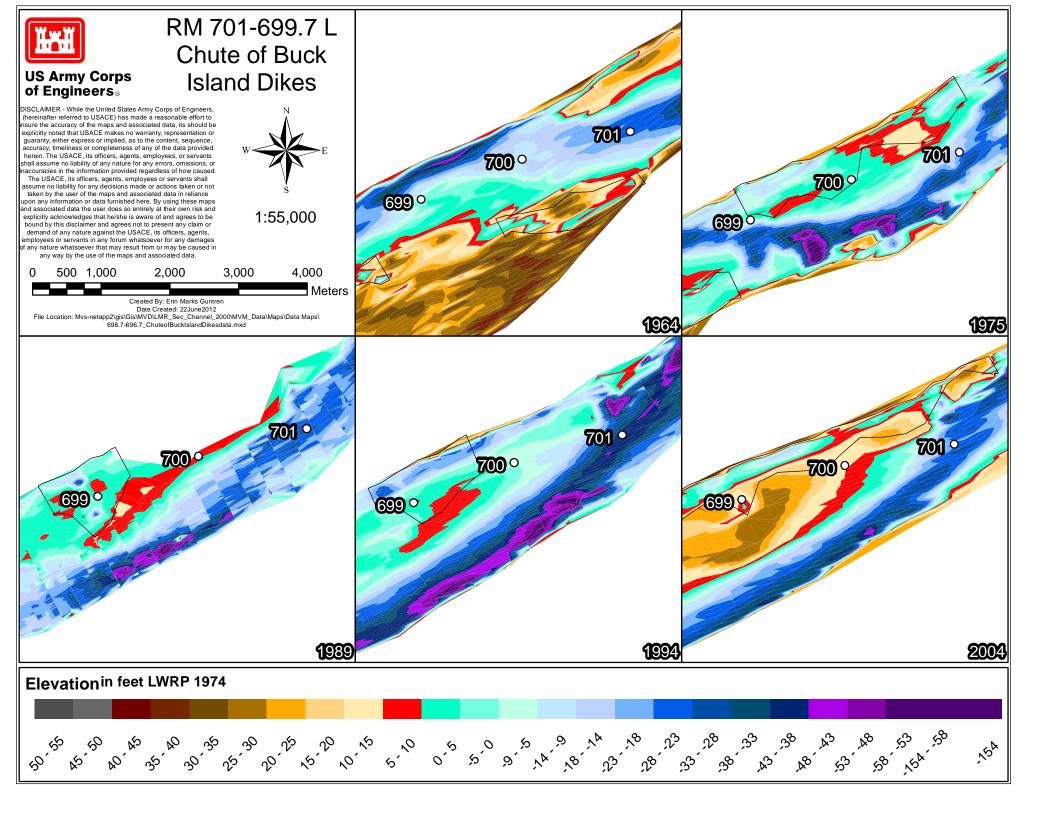


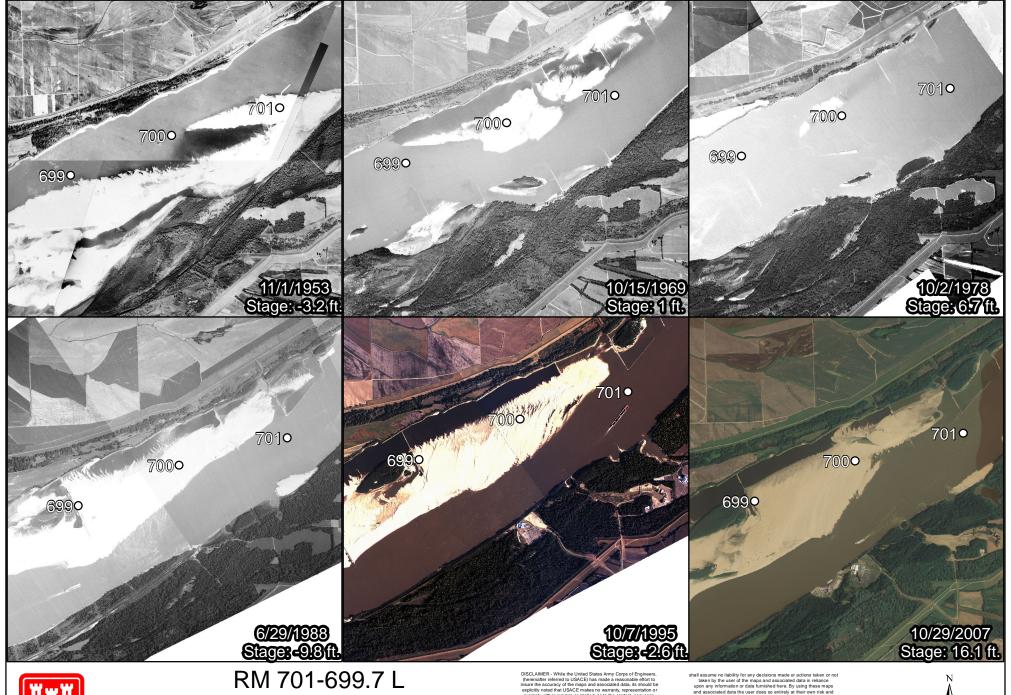
1,250 2,500

5,000

7,500

10,000







RM 701-699.7 L Chute of Buck Island Dikes

1:55,000 Distance to gage: 35 river miles

Created by: Erin Marks Guntren
Date Created: 28June2012
File Path:Mvs-netapp2\gis\Gis\MVDLMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
698.7-969.7L_ChuteofBuckIslandDikesphotos.mxd

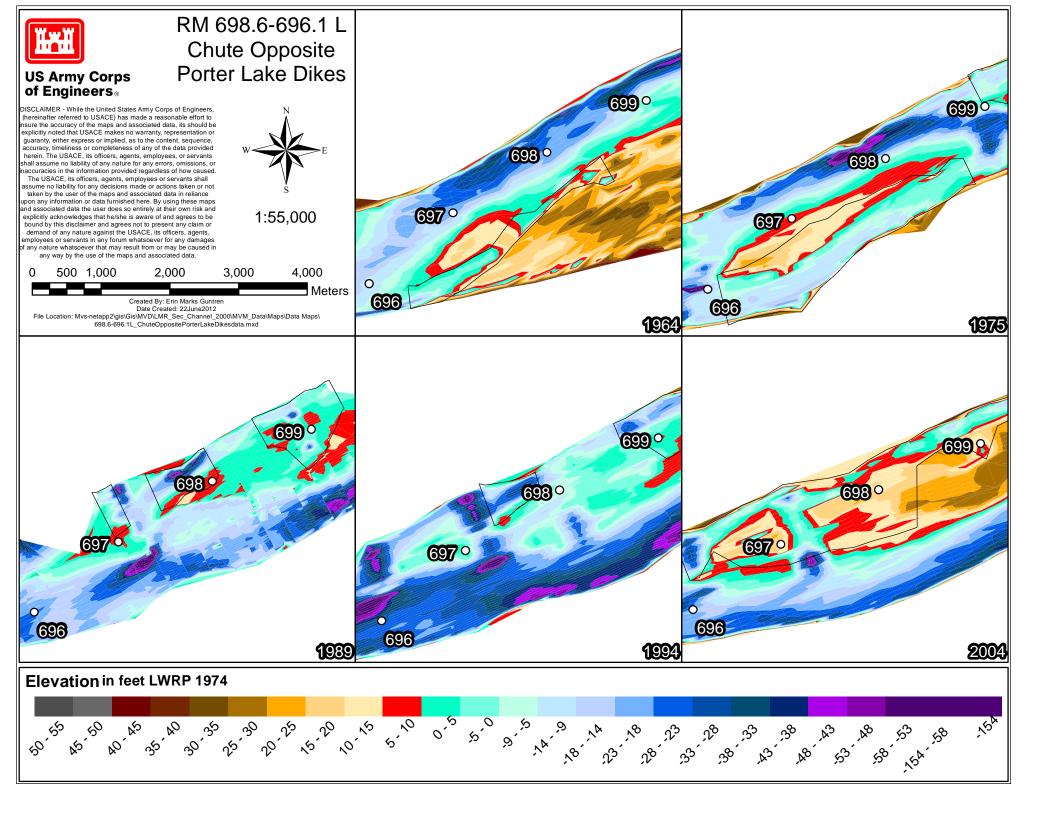
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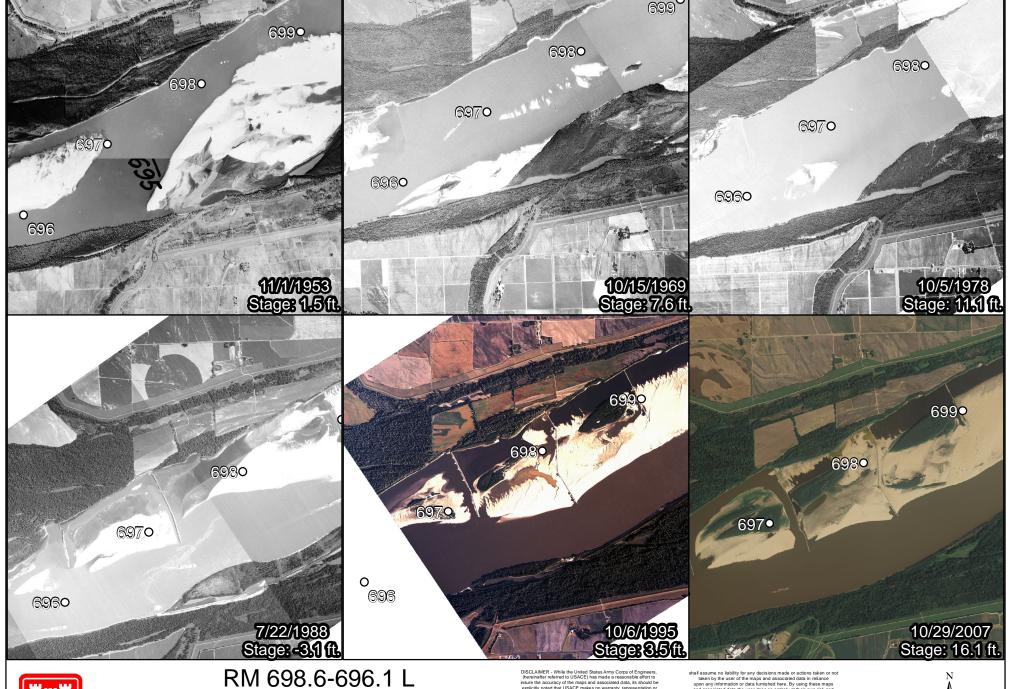
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Meters

600 1,200 2,400 3,600 4,800







Chute Opposite Porter Lake Dikes

1:55,000 Distance to gage: 34 river miles

Created by: Erin Marks Guntren Date Created: 28June2012 $\label{lem:path:maps} File \ Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data\ Maps\Data\ Maps\Dat$ 698.6-696.1L_ChuteOppositePorterLakeDikesphotos.mxd

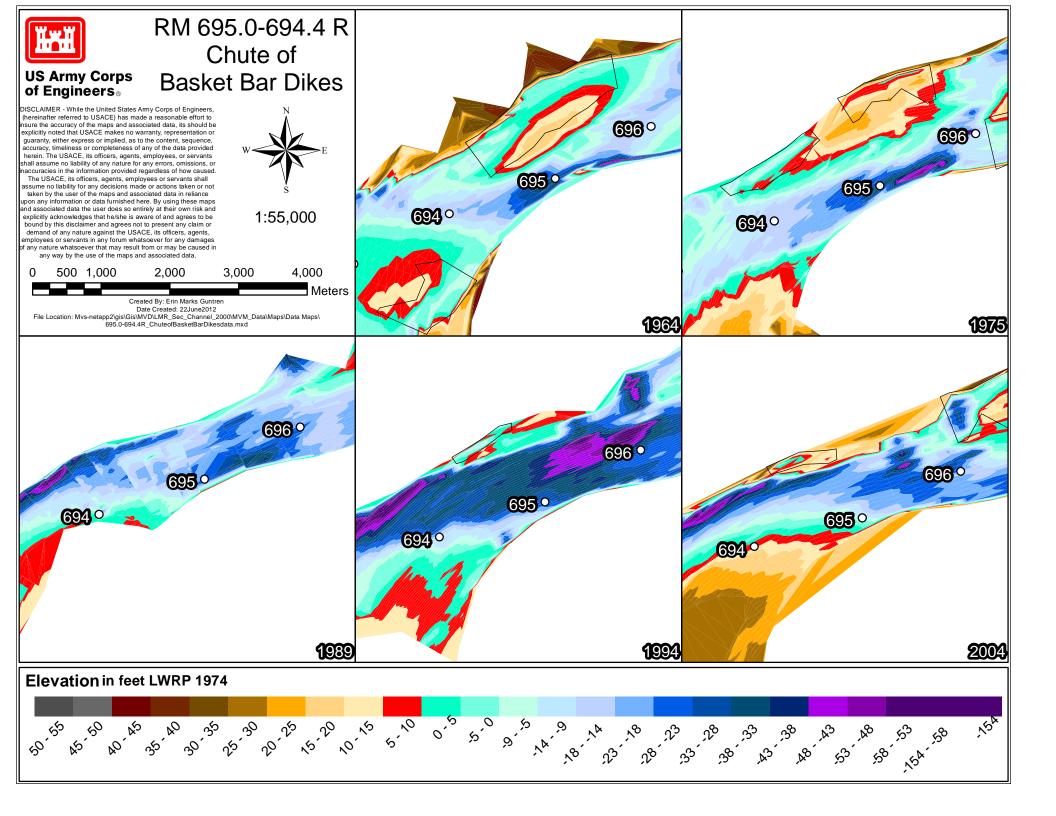
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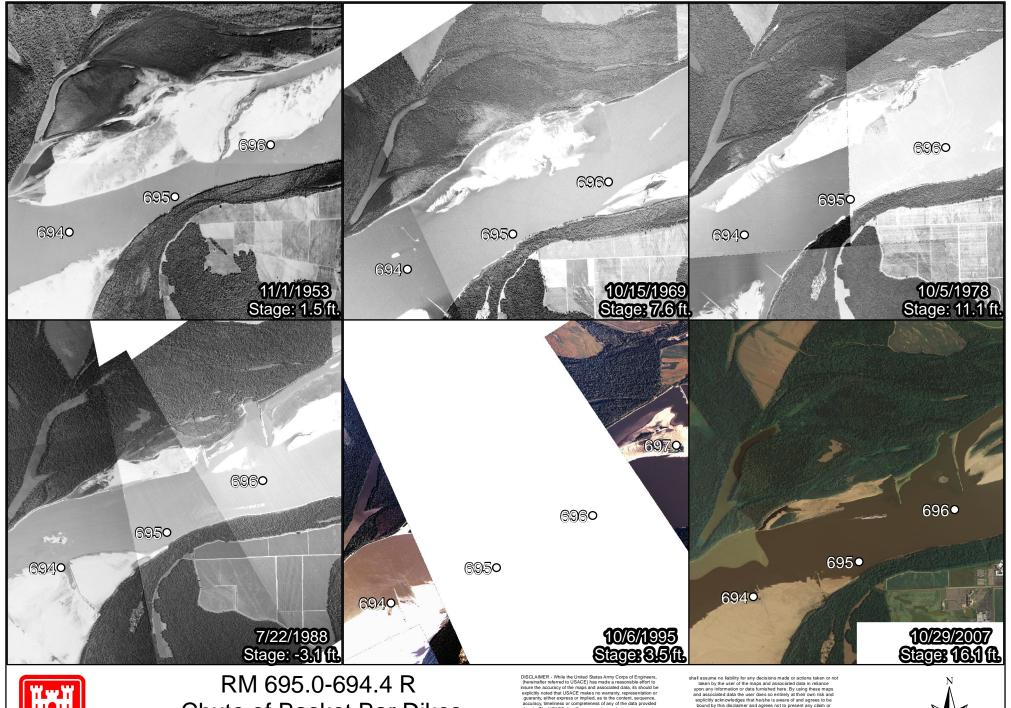
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2,400 1,200

4,800 3,600







Chute of Basket Bar Dikes 1:55,000 Distance to gage: 32 river miles

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695.0-694.4R_ChuleofBasketBarDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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1,200 2,400 3,600 4,800

US Army Corps of Engineers

RM 693.6-692.7 L Chute of Commerce Dikes

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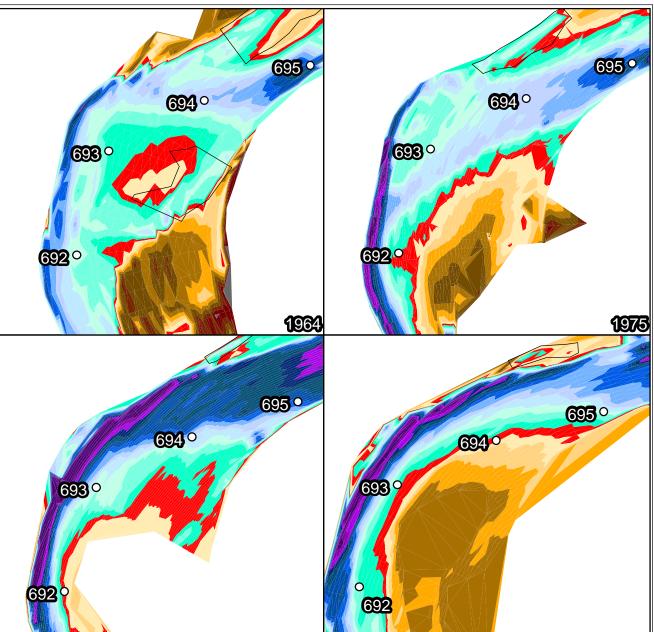


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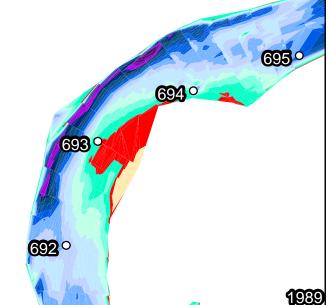
Date Created: 22June2012

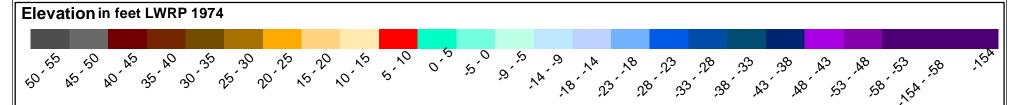
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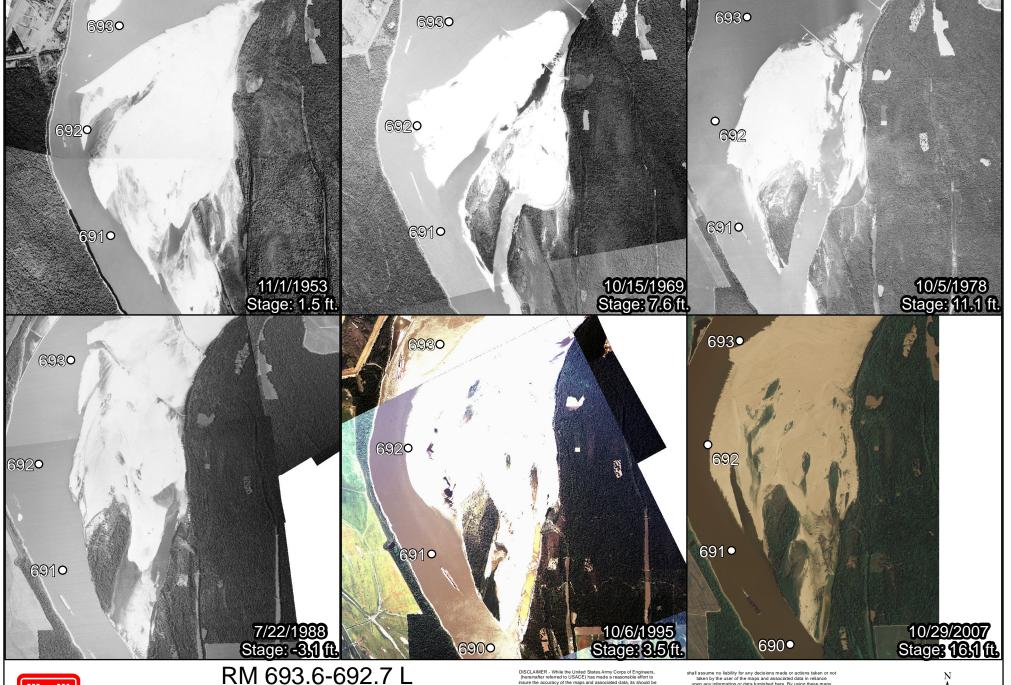


1994

2004









RM 693.6-692.7 L Chute of Commerce Dikes

1:55,000 Distance to gage: 29 river miles

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1,200 2,400 3,600

4,800

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Appendix F: Reach F – River Miles 691-658 Memphis District

Nine secondary channels were identified in Reach F (see below). Only seven secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table F1. Secondary channels and their upstream river mile for Reach F; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile
Chute 1 at Mhoon Bend	688.8R	Chute of Below Walnut Bend Dikes	676.9R
Chute at Old River Landing	688.5L	Chute at St. Francis Bend	673.8L
Chute 2 Below Mhoon Bend	684.5R	Chute of Prairie Point Towhead	668.5R
Chute of Bordeaux Point Dikes	681.6L		
Chute of Walnut Bend Dikes	682.0R		
Chute of Shoo Fly Bar	677.0L		

Reach Summary

Table F2. Sum of Reach F area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)	Volume (yds3)			
cvrg.		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	100%	70	140	260	430	1,116,000	5,392,000	
1975	100%	80	140	260	500	1,654,000	6,235,000	
1994	100%	140	280	570	910	2,847,000	12,018,000	
2004	100%	70	90	120	270	1,392,000	3,700,000	

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Table F3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach F. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Casandan, Ohannal	River	Veer	Cvrg.		Area (Acres)	Volume (yd3)		
Secondary Channel	Miles	Year		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 1 at Mhoon Bend	688.8- 685.6R	1964	100%	0	10	70	150	48,000	1,265,000
Chute 1 at Mhoon Bend	688.8- 685.6R	1975	100%	0	0	0	0	0	0
Chute 1 at Mhoon Bend	688.8- 685.6R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 at Mhoon Bend	688.8- 685.6R	1994	100%	30	90	220	330	519,000	3,936,000
Chute 1 at Mhoon Bend	688.8- 685.6R	2004	100%	0	0	0	0	0	0
Chute at Old River Landing	688.5- 688L	1964	100%	0	0	0	0	0	0
Chute at Old River Landing	688.5- 688L	1975	100%	10	20	40	60	282,000	933,000
Chute at Old River Landing	688.5- 688L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Old River Landing	688.5- 688L	1994	100%	0	0	0	0	0	0
Chute at Old River Landing	688.5- 688L	2004	100%	0	0	0	0	0	0
Chute 2 Below Mhoon Bend	684.5- 683.3R	1964	100%	0	0	20	40	10,000	295,000
Chute 2 Below Mhoon Bend	684.5- 683.3R	1975	100%	0	0	0	0	0	0
Chute 2 Below Mhoon Bend	684.5- 683.3R	1989	100%	0	0	0	0	0	0
Chute 2 Below Mhoon Bend	684.5- 683.3R	1994	100%	0	0	0	0	0	0
Chute 2 Below Mhoon Bend	684.5- 683.3R	2004	100%	0	0	0	0	0	0
Chute of Bordeaux Point Dikes	681.6- 679.5L	1964	100%	0	0	0	0	0	0
Chute of Bordeaux Point Dikes	681.6- 679.5L	1975	100%	0	0	0	40	0	151,000
Chute of Bordeaux Point Dikes	681.6- 679.5L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Bordeaux Point Dikes	681.6- 679.5L	1994	100%	0	40	140	290	111,000	2,505,000

MRG&P Report No. 8 220

Secondary Channel River		Year	Cons		Area (Acres)	Volume (yd³)		
Secondary Channel	Miles	icai	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Bordeaux Point Dikes	681.6- 679.5L	2004	100%	0	0	0	0	0	0
Chute of Walnut Bend Dikes	682.0- 680.8R	1964	100%	0	0	0	0	0	0
Chute of Walnut Bend Dikes	682.0- 680.8R	1975	100%	30	40	50	70	772,000	1,648,000
Chute of Walnut Bend Dikes	682.0- 680.8R	1989	100%	0	0	0	0	0	0
Chute of Walnut Bend Dikes	682.0- 680.8R	1994	100%	0	0	0	0	0	0
Chute of Walnut Bend Dikes	682.0- 680.8R	2004	100%	20	30	40	70	561,000	1,309,000
Chute of Shoo Fly Bar	677- 676.4L	1964	100%	0	0	0	0	0	0
Chute of Shoo Fly Bar	677- 676.4L	1975	100%	0	0	0	0	0	0
Chute of Shoo Fly Bar	677- 676.4L	1989	100%	0	0	0	0	0	0
Chute of Shoo Fly Bar	677- 676.4L	1994	100%	0	0	0	0	0	0
Chute of Shoo Fly Bar	677- 676.4L	2004	100%	50	60	70	110	831,000	2,091,000
Chute of Below Walnut Bend Dikes	676.9- 674.4R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Walnut Bend Dikes	676.9- 674.4R	1975	100%	20	60	150	240	395,000	2,723,000
Chute of Below Walnut Bend Dikes	676.9- 674.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Walnut Bend Dikes	676.9- 674.4R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Walnut Bend Dikes	676.9- 674.4R	2004	100%	0	0	0	0	0	0
Chute at St. Francis Bend	673.8- 671.4L	1964	100%	70	120	170	240	1,057,0 00	3,832,000
Chute at St. Francis Bend	673.8- 671.4L	1975	100%	40	80	170	330	599,000	3,502,000
Chute at St. Francis Bend	673.8- 671.4L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at St. Francis Bend	673.8- 671.4L	1994	98%	110	150	200	290	2,217,0 00	5,577,000
Chute at St. Francis Bend	673.8- 671.4L	2004	100%	0	0	0	90	0	300,000

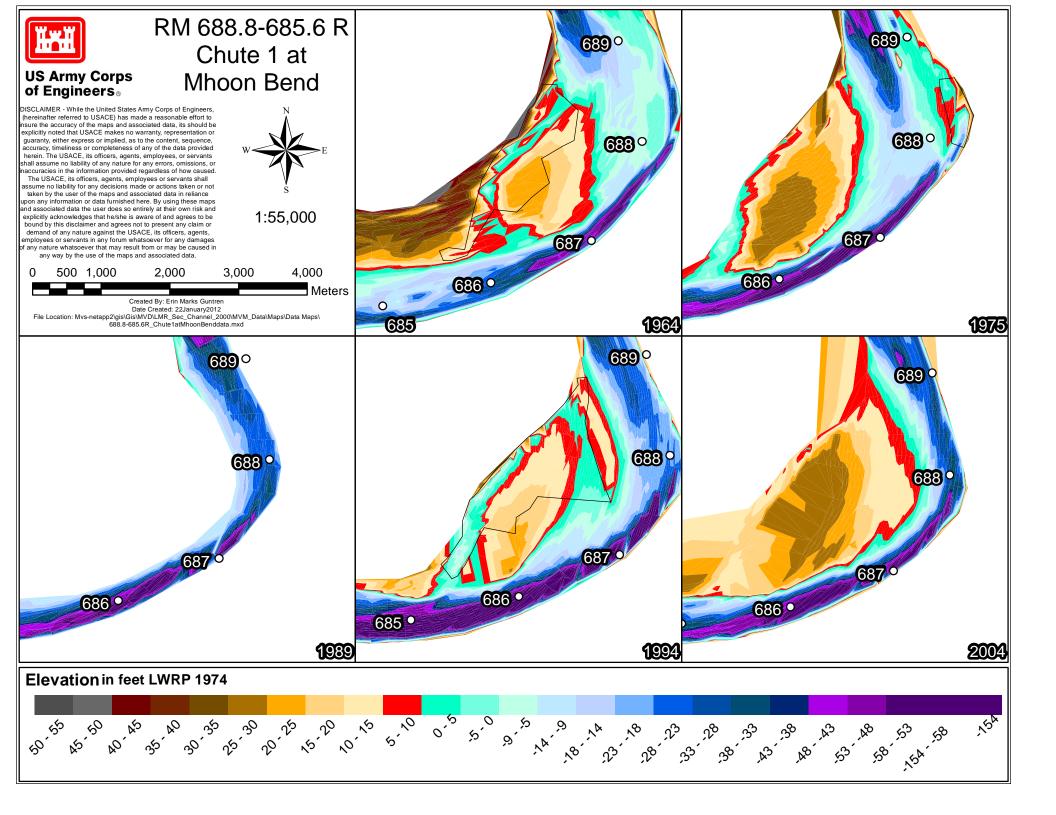
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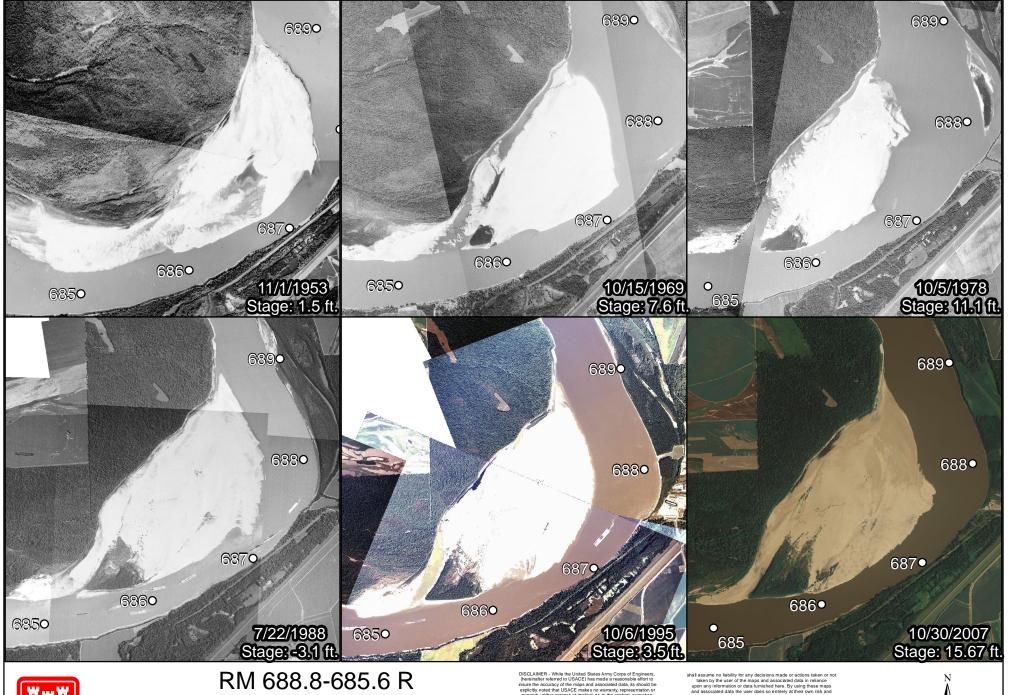
Secondary Channel	River	Year	Cvrg.		Area (Acres)	Volume (yd³)		
	Miles	Ibai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Prairie Point Towhead	668.5- 664.5R	1964	100%	20	60	200	430	574,000	3,900,000
Chute of Prairie Point Towhead	668.5- 664.5R	1975	50%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Prairie Point Towhead	668.5- 664.5R	1989	100%	70	180	280	450	1,456,0 00	6,080,000
Chute of Prairie Point Towhead	668.5- 664.5R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Prairie Point Towhead	668.5- 664.5R	2004	95%	10	50	160	280	300,000	2,896,000

MRG&P Report No. 8

HAH **Memphis District: Reach F** US Army Corps of Engineers » River Miles: 691-658 Chute 1 at Mhoon Bendy Chute of Commer Marianna 690 Chute 2 Below Mhoon Bendy Chute of Walnut Bend Dikes Chute at Old River Landing Chute of Bordeaux Point Dikes **Chute of Below Walnut Bend Dikes** Chute of Shoo Fly Bar St. Francis La Grange National Chute of St. Francis Bend Chute of Prairie Point Towhead Dundee 660 e of Montezuma Bar Dikes River Miles **Location Map** 2000 Outlines IL IN IN KS MO KY 1990 Outlines TN oĸ AR GA 1980 Outlines 1970 Outlines AL ΤX 1960 Outlines Mississippi River 6 Created By: Erin Marks Guntren Date Created: 1November2013

Figure F1. Memphis District Reach F river miles 691-658.







RM 688.8-685.6 R Chute 1 at Mhoon Bend

1:55,000 Distance to gage: 24 river miles

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Date Created: 28June2012
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688.8-885.RR_Chute1atMhoonBendphotos.mxd

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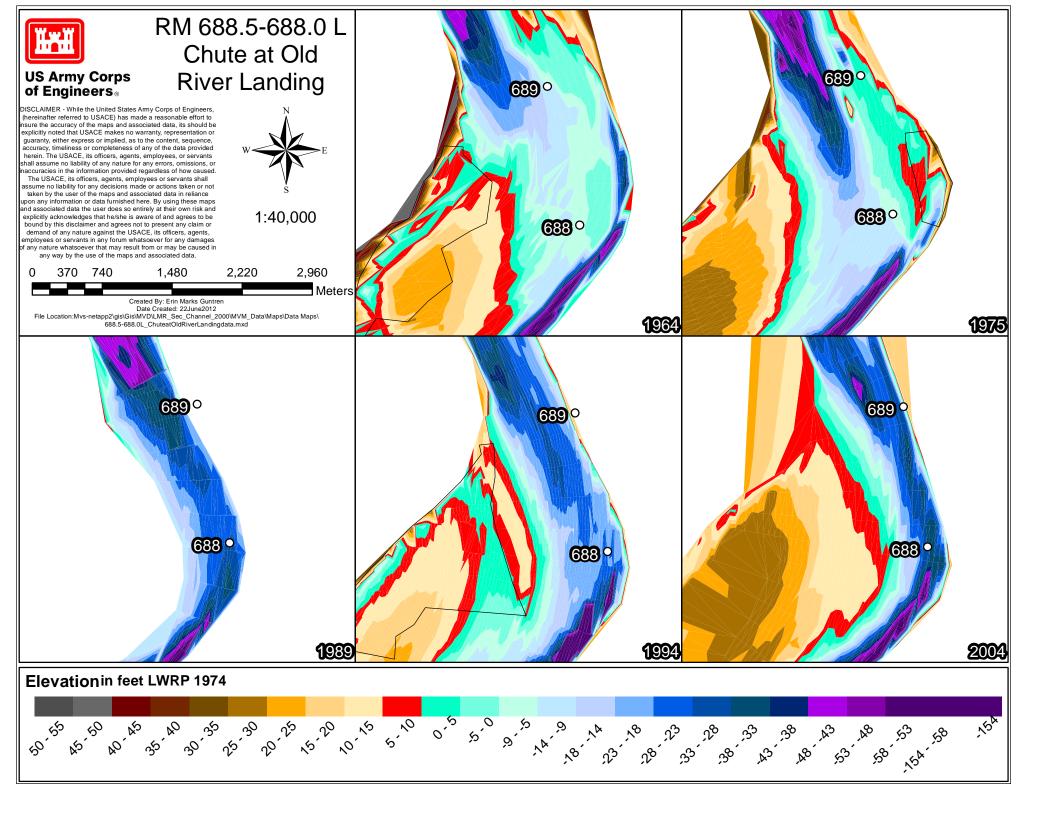
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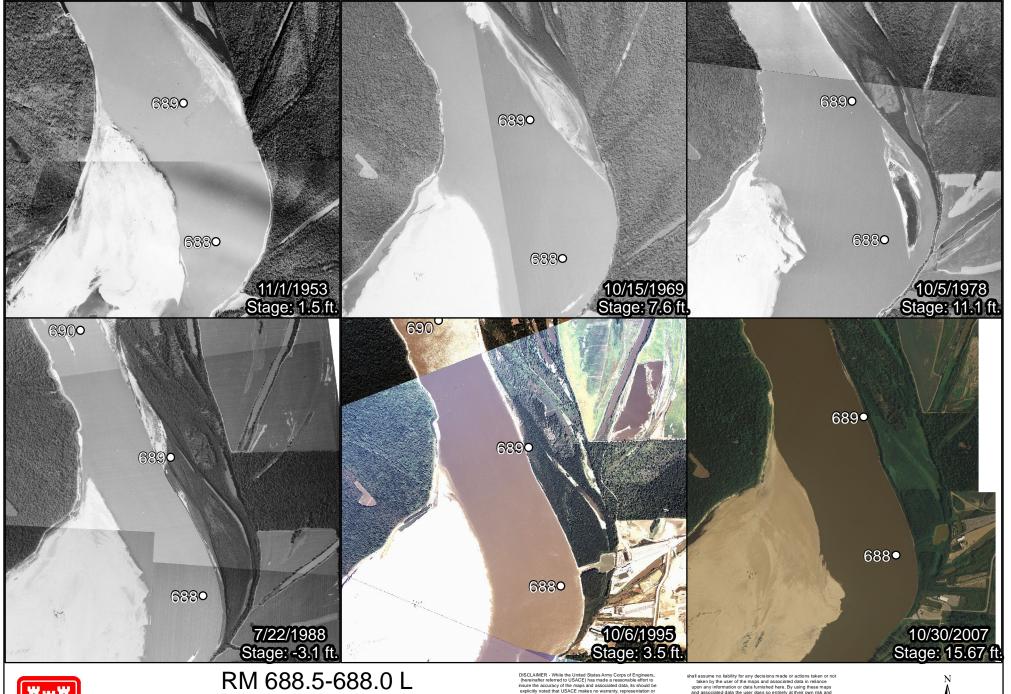


600 1,200 2,400 3,600

Meters

4,800







RM 688.5-688.0 L Chute at Old River Landing

1:40,000 Distance to gage: 25 river miles

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Date Created: 28June2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
688.5-688.0L_ChuteatOldRiverLandingphotos.mxd

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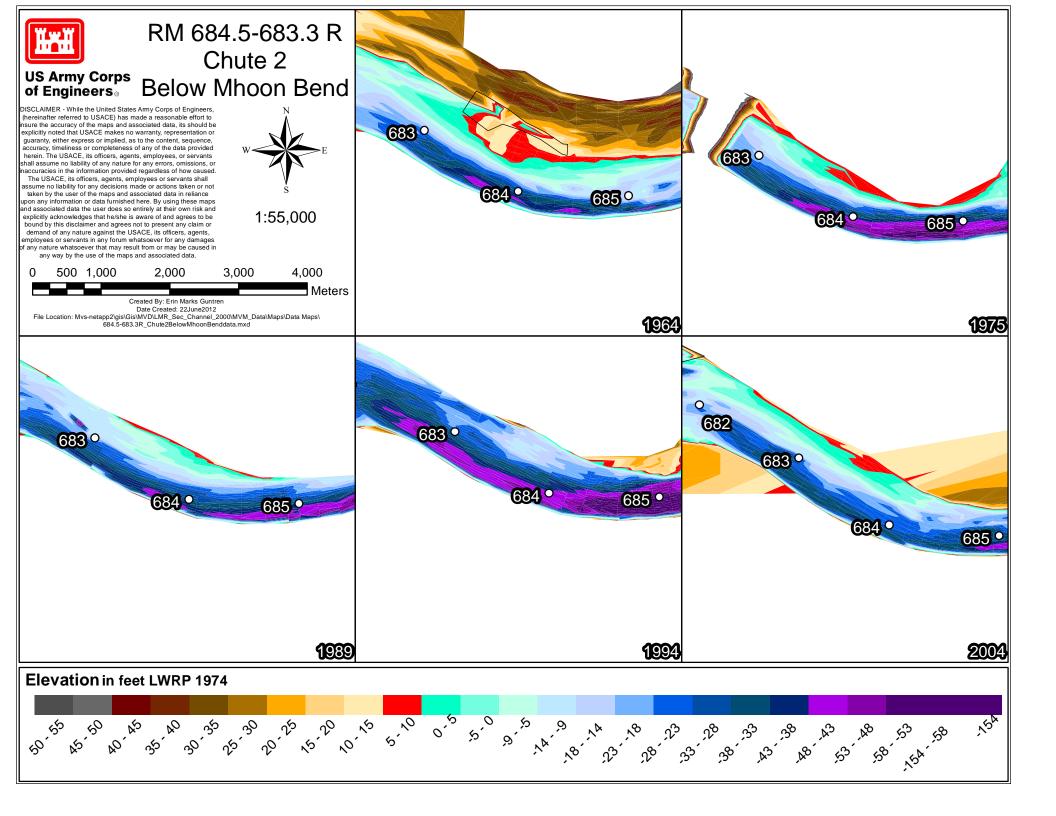
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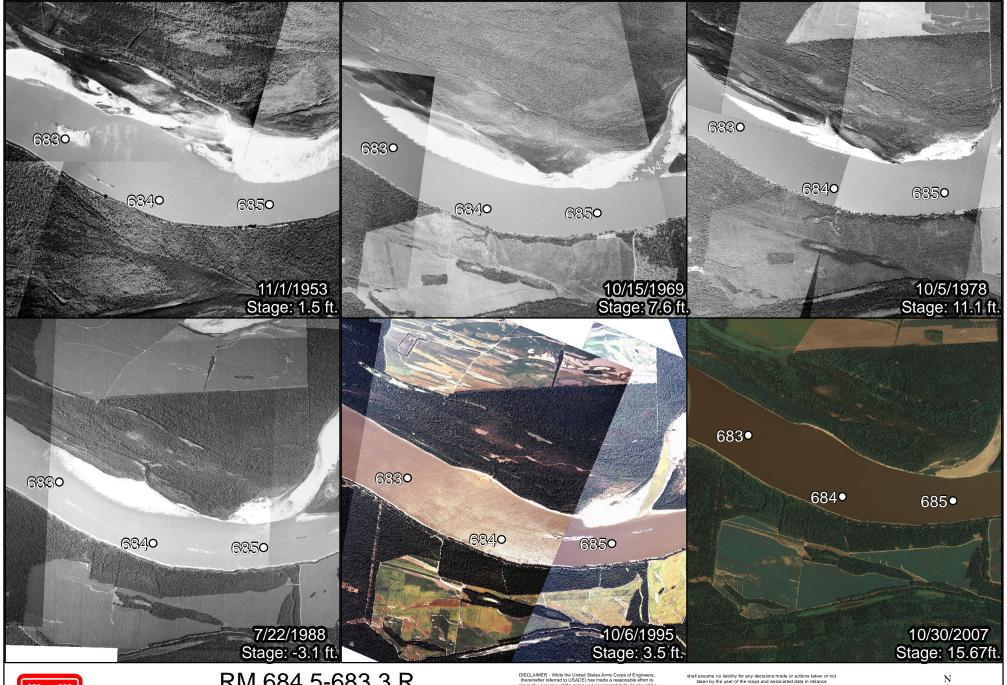
2,670



445 890 1,780

3,560 Meters







RM 684.5-683.3 R Chute 2 Below Mhoon Bend

1:55,000 Distance to gage: 21 river miles

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Date Created: 28June2012
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600 1,200 2,400

3,600 4,800

US Army Corps of Engineers®

RM 681.6-679.5 L Chute of Bordeaux **Point Dikes**

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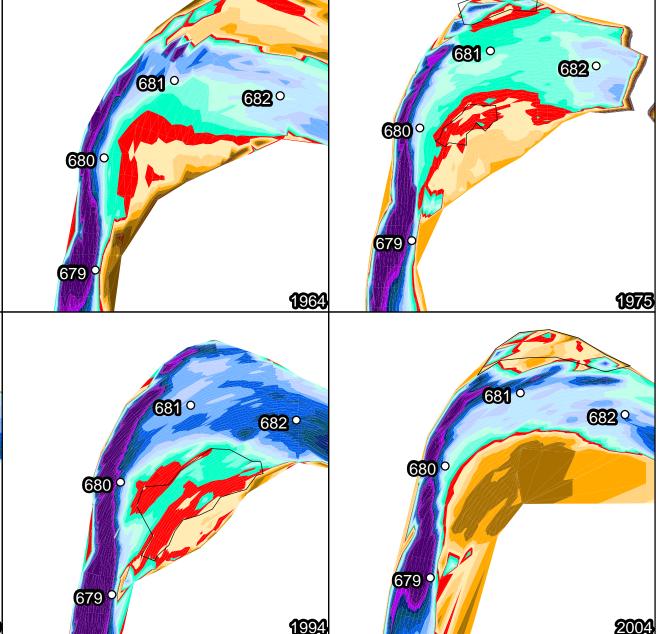
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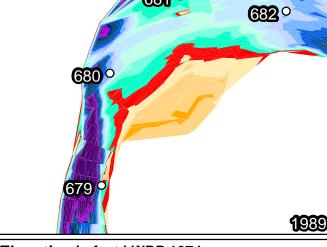


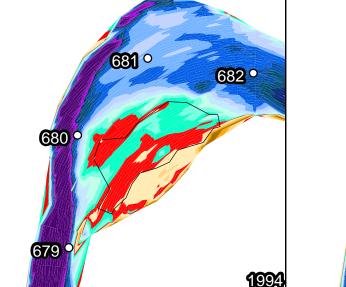
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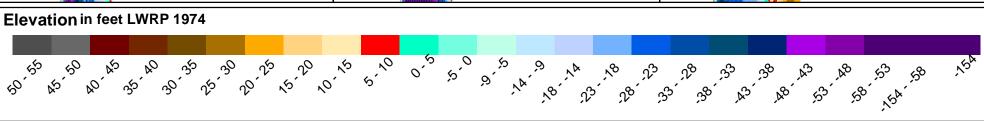


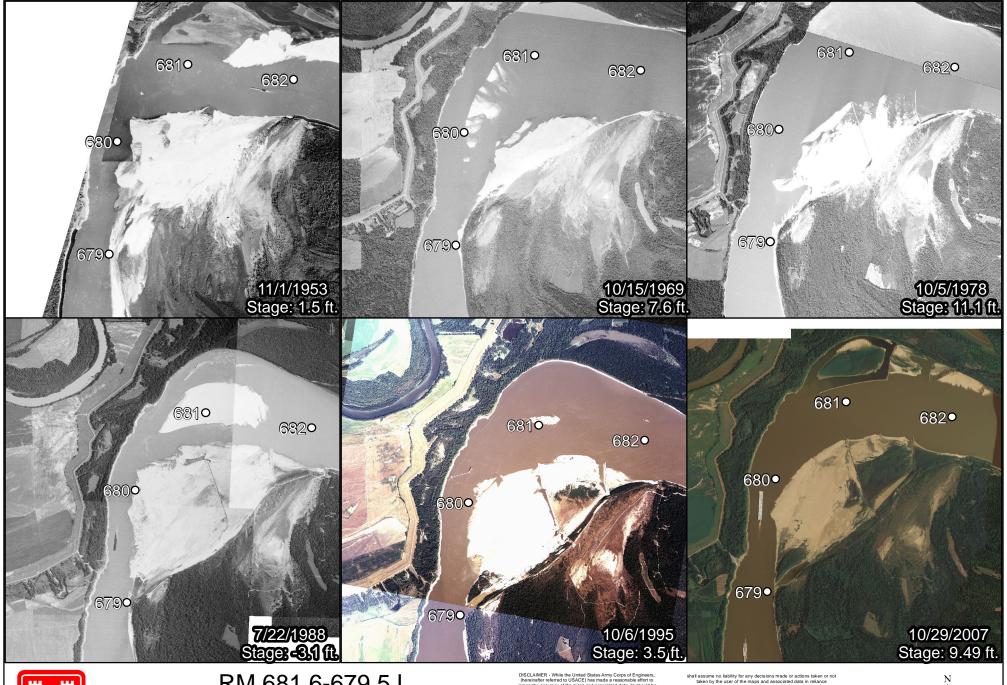
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RM 681.6-679.5 L Chute of Bordeaux Point Dikes

1:55,000 Distance to gage: 18 river miles

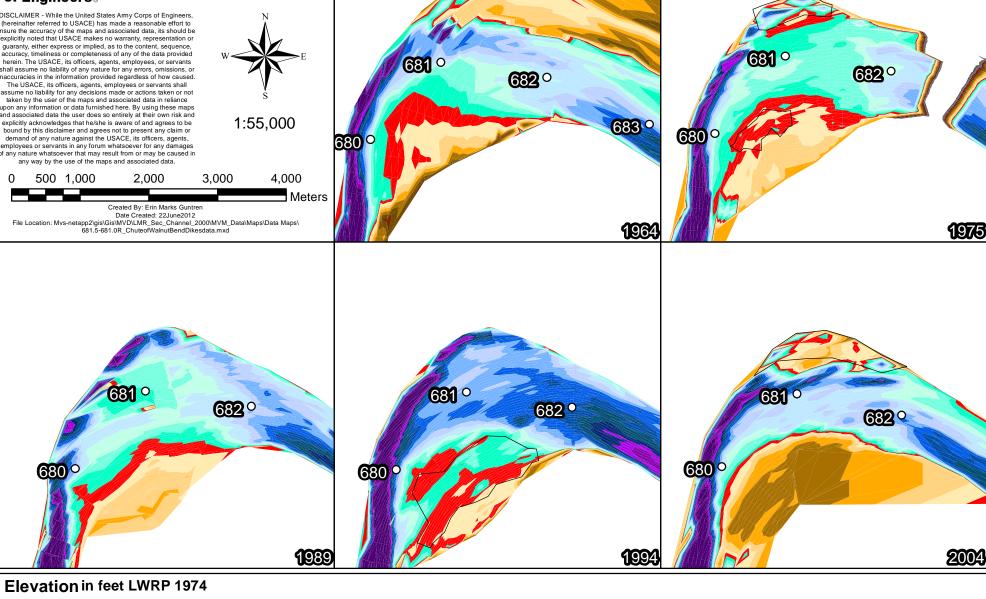
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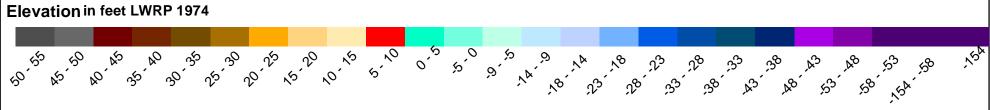
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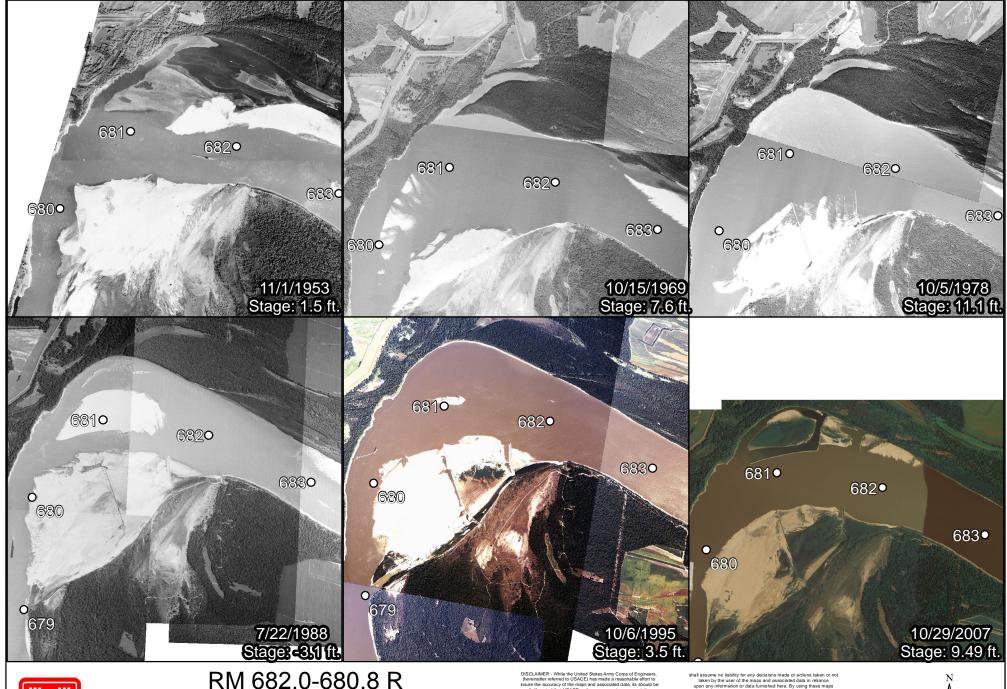


600 1,200 2,400 3,600 4,800

RM 682.0-680.8 R Chute of $\begin{array}{ll} \textbf{US Army Corps} & Walnut \ Bend \ Dikes \\ \textbf{of Engineers}_{\circ} & \end{array}$ DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 4,000 500 1,000 2,000 3,000 Meters Created By: Erin Marks Guntrer Date Created: 22June2012 File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 681.5-681.0R_ChuteofWalnutBendDikesdata.mxd









RM 682.0-680.8 R Chute of Walnut Bend Dikes

1:55,000 Distance to gage: 18 river miles

Created by: Erin Marks Guntren
Date Created: 28June2012
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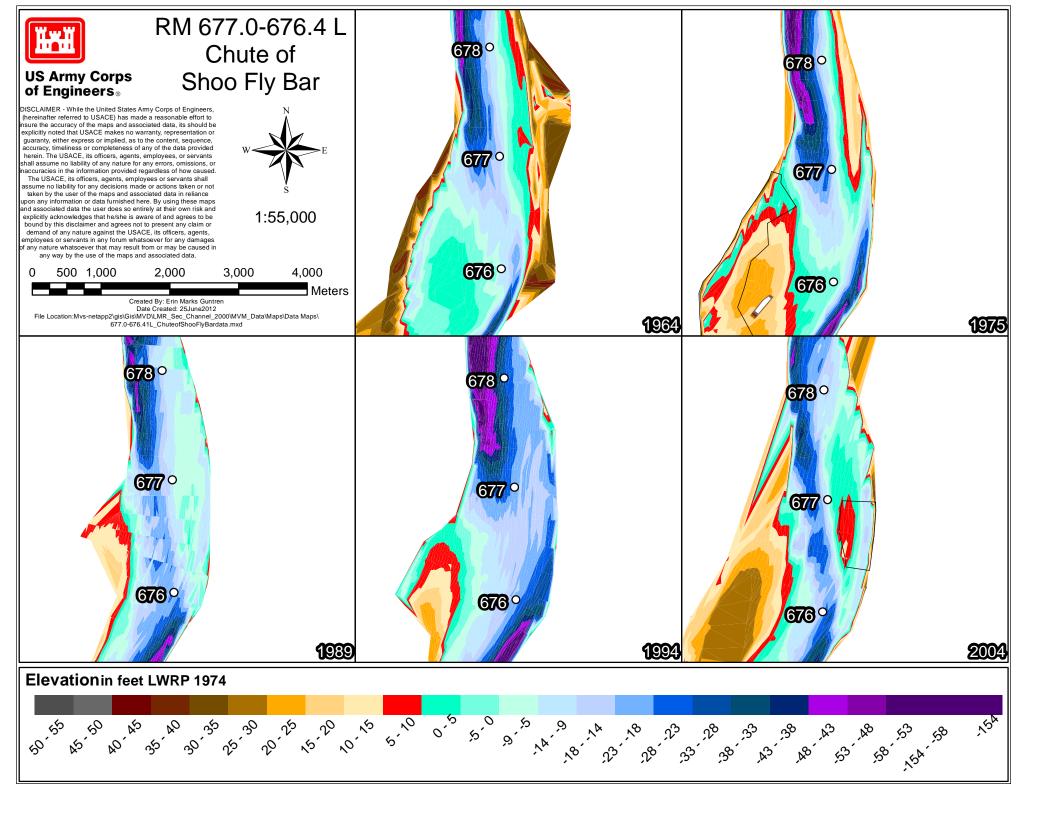
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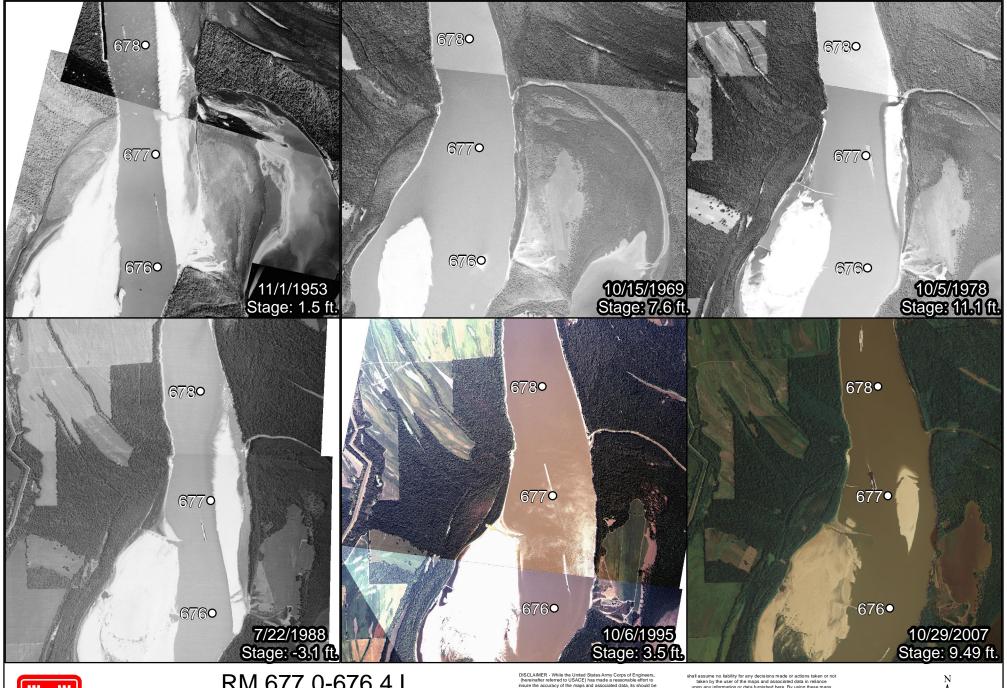
3,600



600 1,200 2,400

4,800







RM 677.0-676.4 L Chute of Shoo Fly Bar

1:55,000 Distance to gage: 14 river miles

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Date Created: 28June2012
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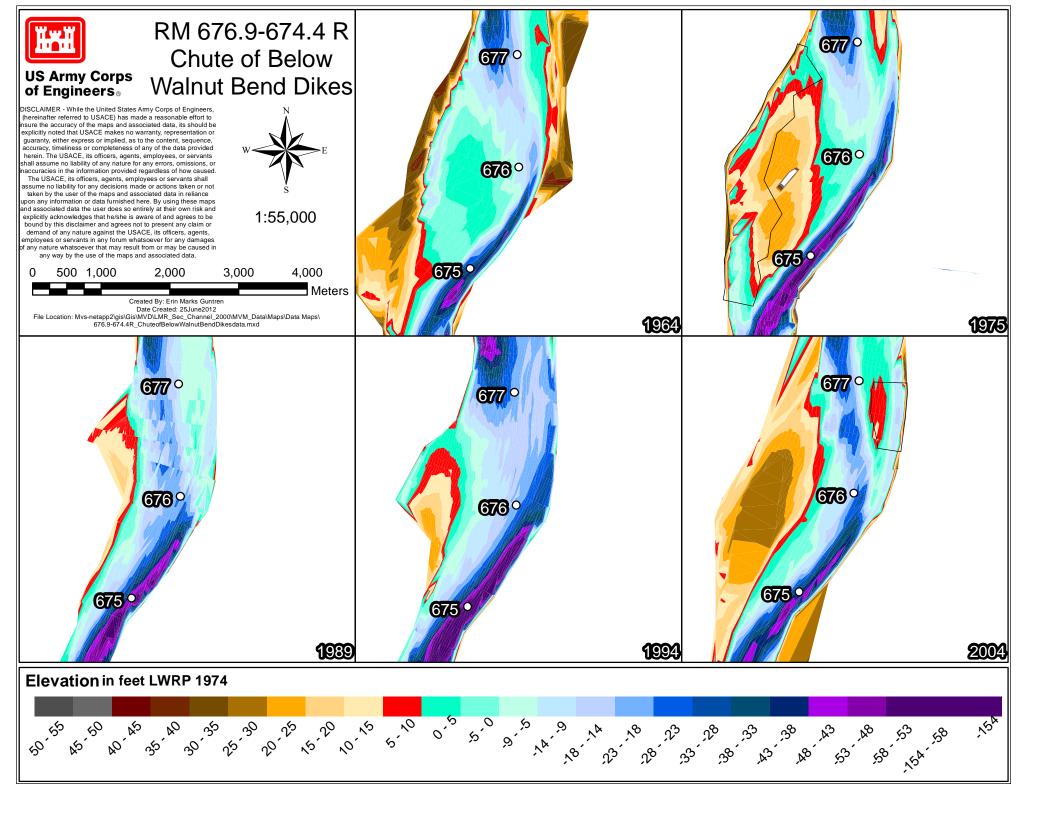
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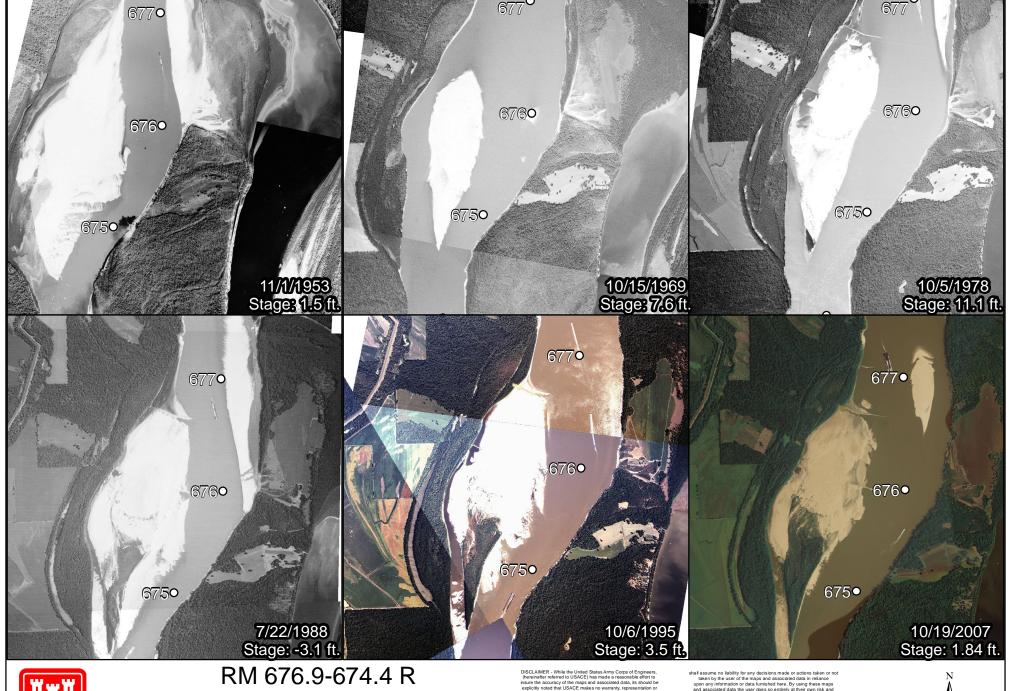
3,600



600 1,200 2,400

4,800







Chute of Below Walnut Bend Dikes

US Army Corps of Engineers_®

1:55,000 Distance to gage: 13 river miles

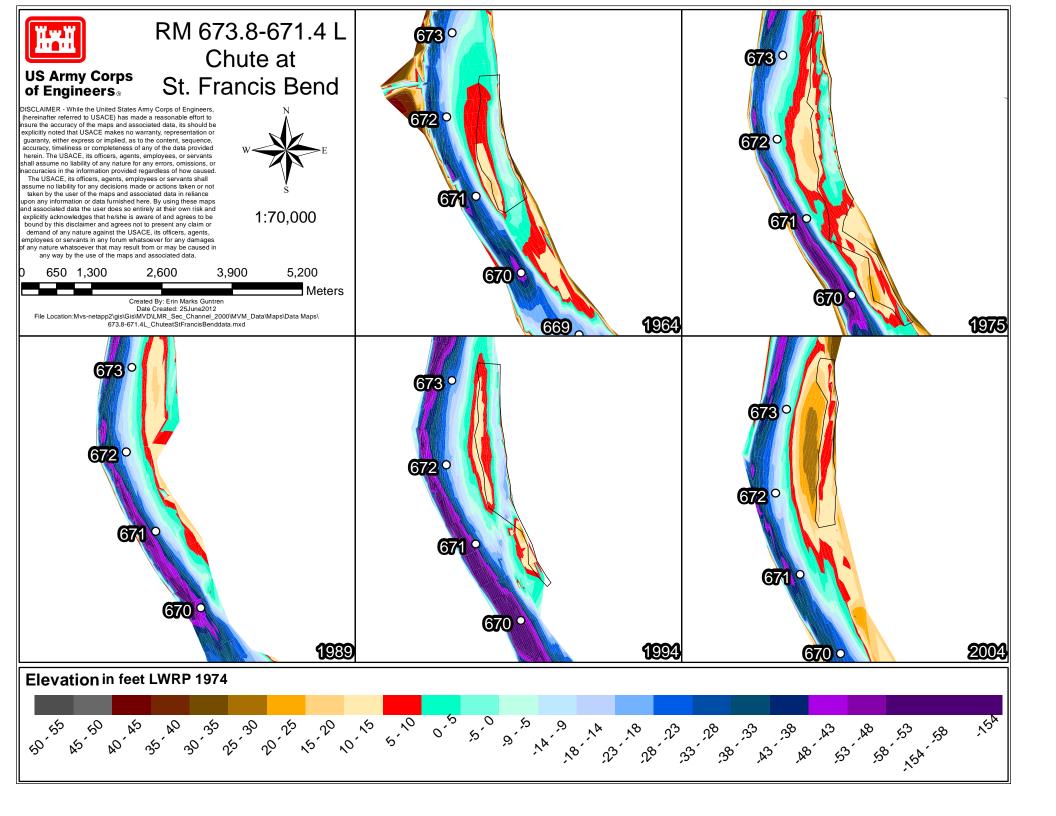
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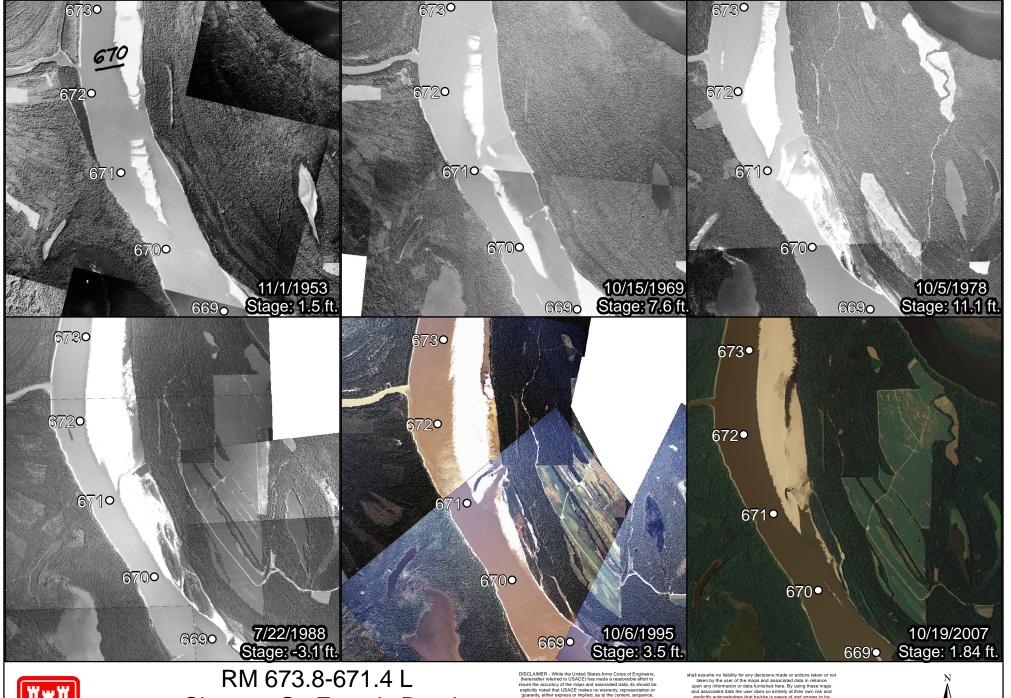
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1,200 2,400 3,600 4,800







Chute at St. Francis Bend

1:70,000 Distance to gage: 7 river miles

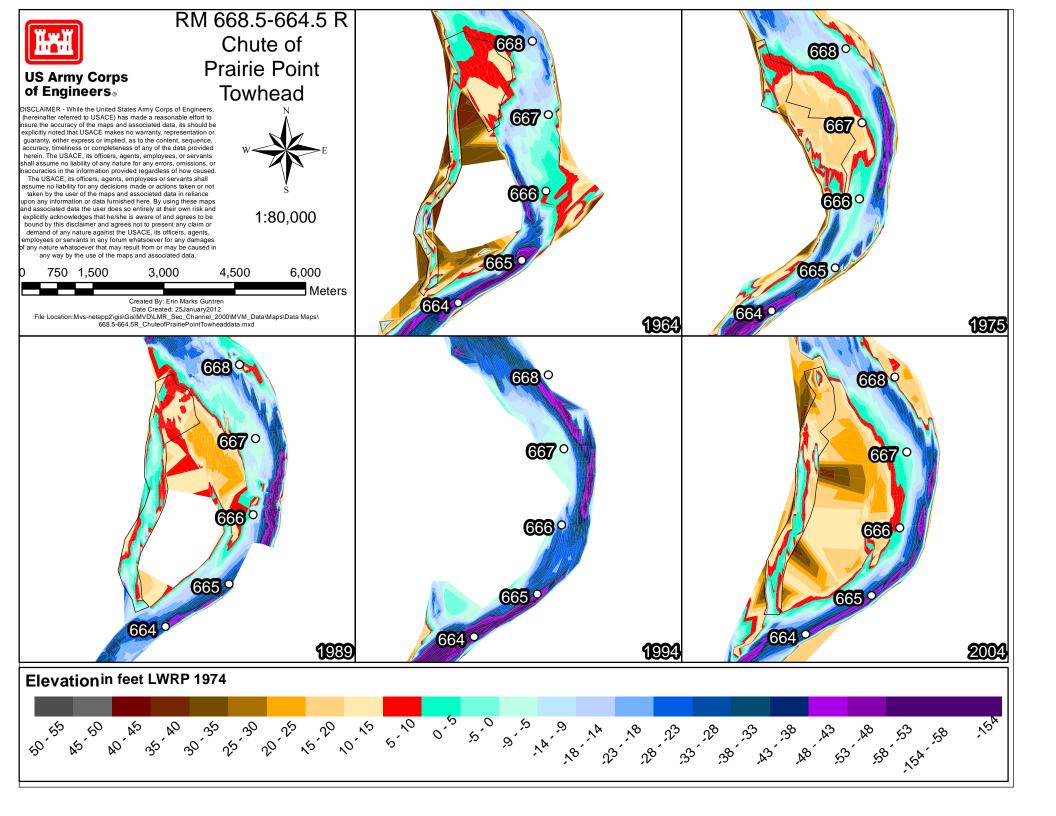
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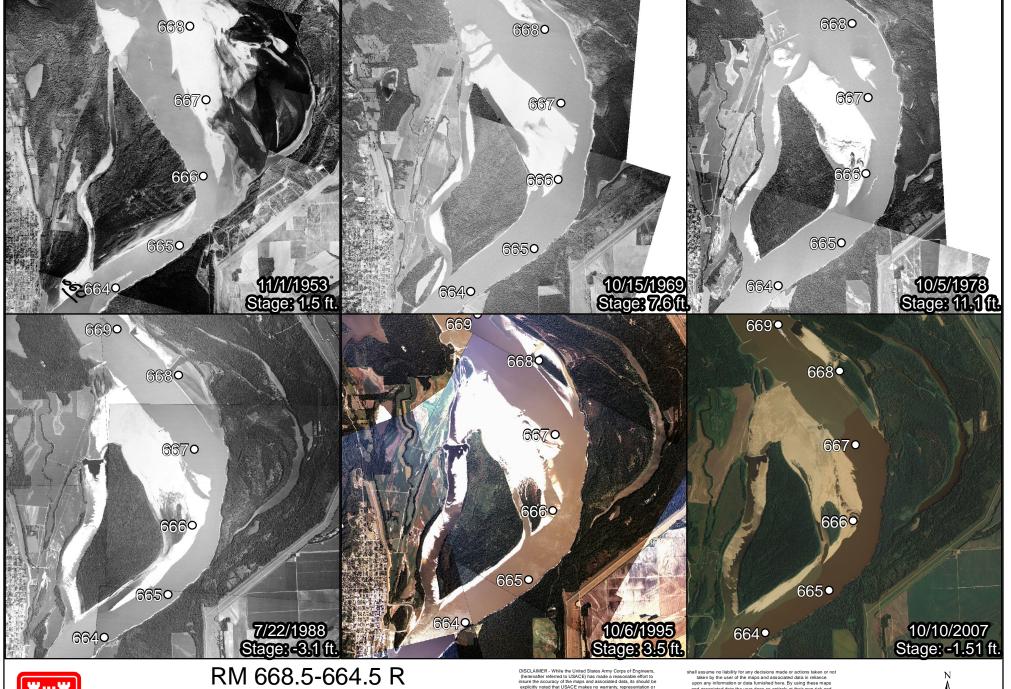
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750 1,500 3,000 4,500 6,000 Meters







RM 668.5-664.5 R Chute of Prairie Point Towhead

1:80,000 Distance to gage: 4 river miles

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900 1,800 3,600 5,400 7,200 Meters

Appendix G: Reach G – River Miles 658-596 Memphis District

Fourteen secondary channels were identified in Reach G (see below). Only seven secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table G1. Secondary channels and their upstream river mile for Reach G; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute of Montezuma Bar Dikes	657.3L	Chute of Island 62 Dikes	640.1R	Chute of Island 70 Dikes	608.6L
Chute of Montezuma Towhead	656.2R	Chute of Island 64 Dikes	630.4R	Chute Outside Island 70 Dikes	608.4L
Chute of Friars Point Dikes	651.4L	Chute Below Sunflower Dikes	625.7L		
Chute of Kangaroo Point Dikes	648.7R	Chute of Below Ludlow Dikes	623.4R		
Chute at Old Town Bend	644.0L	Chute of Island 67 Dikes	620.8L		
Chute of Island No. 63	640.6L	Chute of Below Knowlton Dikes	615.1R		

Reach Summary

Table G2. Sum of Reach G area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)	Volume (yds ³)		
cvrg.	cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	710	960	1,410	2,120	17,746,000	41,324,000
1975	100%	550	760	1,050	1,440	11,918,000	29,167,000
1994	99%	440	750	1,050	1,280	9,975,000	26,712,000
2004	100%	130	260	500	870	2,447,000	10,827,000

Table G3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach G. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Vear	Year Cvrg.		Area	(Acres)		Volume (yd³)		
Secondary Chamnel	Miles	ieai	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Montezuma Bar Dikes	657.3- 655.7L	1964	100%	220	250	290	320	7,412,000	12,029,000	
Chute of Montezuma Bar Dikes	657.3- 655.7L	1975	100%	140	220	290	340	4,620,000	9,256,000	
Chute of Montezuma Bar Dikes	657.3- 655.7L	1989	100%	210	260	310	350	9,115,000	14,119,000	
Chute of Montezuma Bar Dikes	657.3- 655.7L	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Montezuma Bar Dikes	657.3- 655.7L	2004	100%	40	70	100	130	654,000	2,280,000	
Chute of Montezuma Towhead	656.2- 653.9R	1964	100%	0	0	0	0	0	0	
Chute of Montezuma Towhead	656.2- 653.9R	1975	100%	20	60	110	150	520,000	2,285,000	
Chute of Montezuma Towhead	656.2- 653.9R	1989	100%	0	10	50	180	8,000	1,106,000	
Chute of Montezuma Towhead	656.2- 653.9R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Montezuma Towhead	656.2- 653.9R	2004	100%	0	0	0	0	0	0	
Chute of Friars Point Dikes	651.4- 650.5L	1964	100%	10	30	110	260	259,000	2,284,000	
Chute of Friars Point Dikes	651.4- 650.5L	1975	100%	40	60	90	140	843,000	2,339,000	
Chute of Friars Point Dikes	651.4- 650.5L	1989	100%	0	20	140	190	47,000	2,054,000	
Chute of Friars Point Dikes	651.4- 650.5L	1994	100%	0	0	0	0	0	0	
Chute of Friars Point Dikes	651.4- 650.5L	2004	100%	0	0	70	130	3,000	1,052,000	
Chute of Kangaroo Point Dikes	648.7- 645.4R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Kangaroo Point Dikes	648.7- 645.4R	1975	100%	40	110	230	360	904,000	4,610,000	

Casandan, Ohannal	River	Vaar	Cvrg.		Area	(Acres)		Volume (yd³)		
Secondary Channel	Miles	Year		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Kangaroo Point Dikes	648.7- 645.4R	1989	95%	60	100	220	360	1,141,000	4,723,000	
Chute of Kangaroo Point Dikes	648.7- 645.4R	1994	100%	130	190	340	450	3,101,000	8,310,000	
Chute of Kangaroo Point Dikes	648.7- 645.4R	2004	100%	0	10	80	240	22,000	1,589,000	
Chute at Old Town Bend	644- 643.4L	1964	100%	0	0	0	0	0	0	
Chute at Old Town Bend	644- 643.4L	1975	100%	0	0	0	0	0	0	
Chute at Old Town Bend	644- 643.4L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Old Town Bend	644- 643.4L	1994	100%	0	10	60	110	12,000	935,000	
Chute at Old Town Bend	644- 643.4L	2004	100%	0	0	0	0	0	0	
Chute of Island No. 63	640.6- 637.5L	1964	100%	540	700	930	1,130	13,009,000	27,953,000	
Chute of Island No. 63	640.6- 637.5L	1975	100%	330	430	500	560	7,103,000	15,168,000	
Chute of Island No. 63	640.6- 637.5L	1989	55%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Island No. 63	640.6- 637.5L	1994	95%	200	320	400	440	4,251,000	10,631,000	
Chute of Island No. 63	640.6- 637.5L	2004	100%	10	50	120	230	321,000	2,359,000	
Chute of Island 62 Dikes	640.1- 635.2R	1964	100%	120	140	160	180	3,158,000	5,737,000	
Chute of Island 62 Dikes	640.1- 635.2R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Island 62 Dikes	640.1- 635.2R	1989	90%	30	130	380	640	701,000	6,837,000	
Chute of Island 62 Dikes	640.1- 635.2R	1994	100%	170	330	550	780	3,826,000	12,765,000	
Chute of Island 62 Dikes	640.1- 635.2R	2004	100%	0	0	0	0	0	0	
Chute of Island 64 Dikes	630.4- 627.5R	1964	100%	0	10	100	400	19,000	2,330,000	
Chute of Island 64 Dikes	630.4- 627.5R	1975	100%	40	80	170	320	846,000	3,798,000	
Chute of Island 64 Dikes	630.4- 627.5R	1989	95%	20	80	170	280	406,000	3,256,000	

Casandan Ohannal	River	Voor	Orient		Area	(Acres)		Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Island 64 Dikes	630.4- 627.5R	1994	100%	210	320	410	480	4,978,000	11,558,000	
Chute of Island 64 Dikes	630.4- 627.5R	2004	100%	50	80	130	270	857,000	3,278,000	
Chute Below Sunflower Dikes	625.7- 624.1L	1964	100%	30	70	100	120	661,000	2,218,000	
Chute Below Sunflower Dikes	625.7- 624.1L	1975	100%	20	60	110	150	487,000	2,225,000	
Chute Below Sunflower Dikes	625.7- 624.1L	1989	90%	70	90	130	140	1,150,000	3,139,000	
Chute Below Sunflower Dikes	625.7- 624.1L	1994	100%	0	0	0	0	0	0	
Chute Below Sunflower Dikes	625.7- 624.1L	2004	100%	70	130	170	240	1,266,000	4,138,000	
Chute of Below Ludlow Dikes	623.4- 621.4R	1964	100%	120	150	170	210	3,797,000	6,539,000	
Chute of Below Ludlow Dikes	623.4- 621.4R	1975	100%	110	140	170	270	2,640,000	5,637,000	
Chute of Below Ludlow Dikes	623.4- 621.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Below Ludlow Dikes	623.4- 621.4R	1994	95%	10	40	90	160	237,000	1,769,000	
Chute of Below Ludlow Dikes	623.4- 621.4R	2004	100%	0	0	0	0	0	0	
Chute of Island 67 Dikes	620.8- 619L	1964	100%	0	0	0	0	0	0	
Chute of Island 67 Dikes	620.8- 619L	1975	100%	10	50	130	240	258,000	2,424,000	
Chute of Island 67 Dikes	620.8- 619L	1989	100%	60	100	160	240	1,071,000	3,770,000	
Chute of Island 67 Dikes	620.8- 619L	1994	100%	180	250	310	350	3,736,000	8,641,000	
Chute of Island 67 Dikes	620.8- 619L	2004	0%	no bath	no bath	no bath	no bath	no bath	no bath	
Chute of Below Knowlton Dikes	615.1- 609.1R	1964	100%	0	0	0	0	0	0	
Chute of Below Knowlton Dikes	615.1- 609.1R	1975	100%	220	280	320	380	4,805,000	10,012,000	
Chute of Below Knowlton Dikes	615.1- 609.1R	1989	95%	330	510	600	620	7,954,000	17,400,000	
Chute of Below Knowlton Dikes	615.1- 609.1R	1994	100%	390	560	700	780	9,334,000	20,378,000	

Secondary Channel River		Year	Curd		Area	(Acres)		Volume (yd ³)		
Secondary Channel	Miles	Teal	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Below Knowlton Dikes	615.1- 609.1R	2004	0%	no bath	no bath	no bath	no bath	no bath	no bath	
Chute of Island 70 Dikes	608.6- 605.7L	1964	100%	150	300	510	670	2,701,000	10,849,000	
Chute of Island 70 Dikes	608.6- 605.7L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Island 70 Dikes	608.6- 605.7L	1989	75%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Island 70 Dikes	608.6- 605.7L	1994	100%	60	120	220	350	1,509,000	5,164,000	
Chute of Island 70 Dikes	608.6- 605.7L	2004	0%	no bath	no bath	no bath	no bath	no bath	no bath	
Chute Outside Island 70 Dikes	608.4- 607.9L	1964	100%	0	0	0	0	0	0	
Chute Outside Island 70 Dikes	608.4- 607.9L	1975	100%	0	0	0	0	0	0	
Chute Outside Island 70 Dikes	608.4- 607.9L	1989	0%	no bath	no bath	no bath	no bath	no bath	no bath	
Chute Outside Island 70 Dikes	608.4- 607.9L	1994	100%	20	60	80	100	497,000	1,819,000	
Chute Outside Island 70 Dikes	608.4- 607.9L	2004	100%	0	0	0	0	0	0	

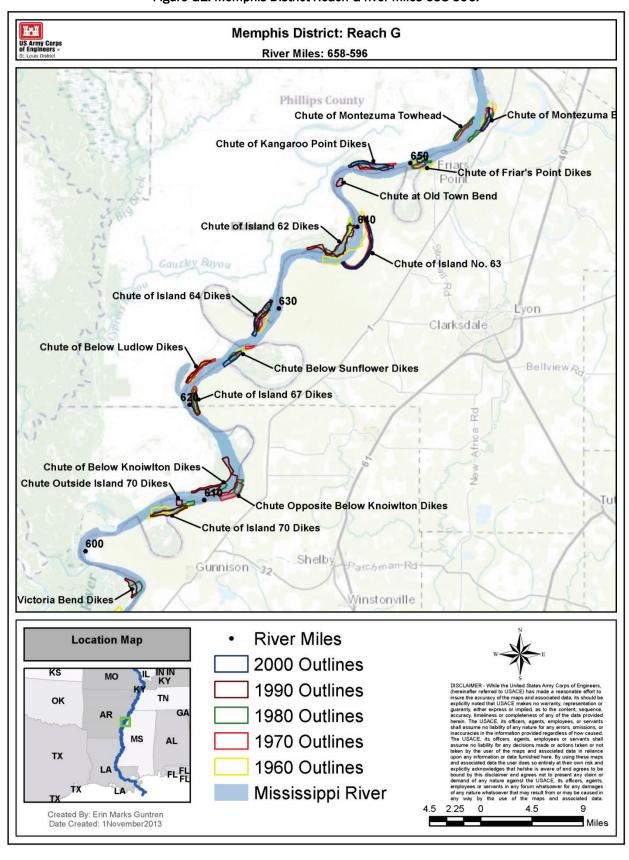
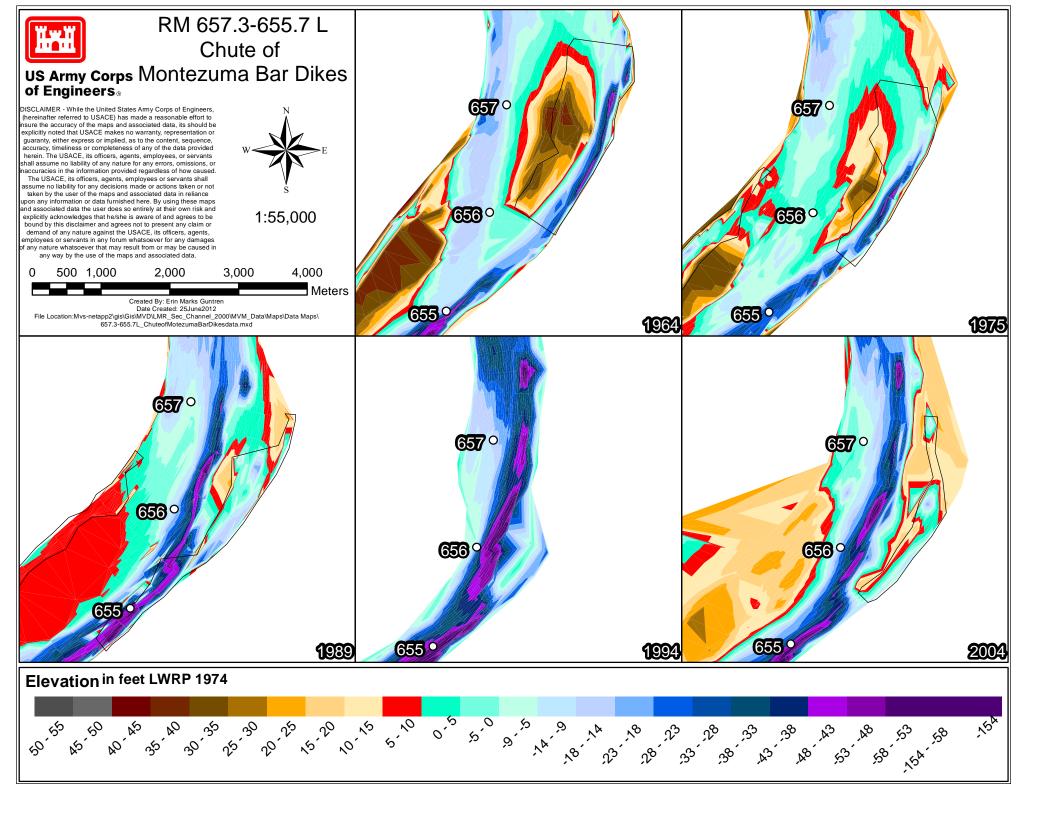
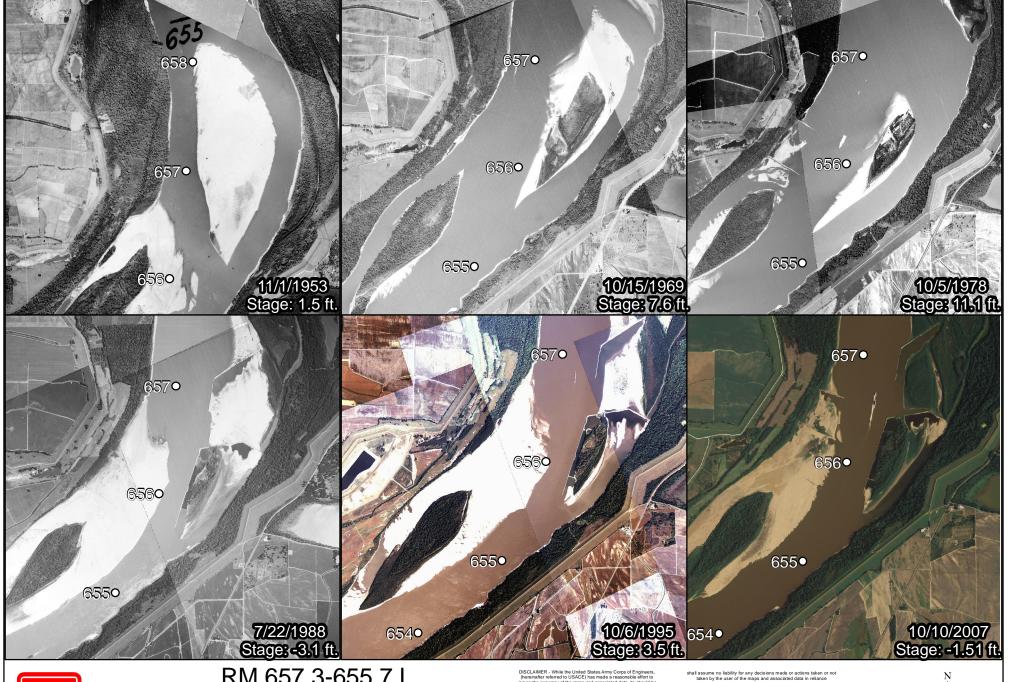


Figure G1. Memphis District Reach G river miles 658-596.







RM 657.3-655.7 L Chute of Montezuma Bar Dikes

1:55,000 Distance to gage: 7 river miles

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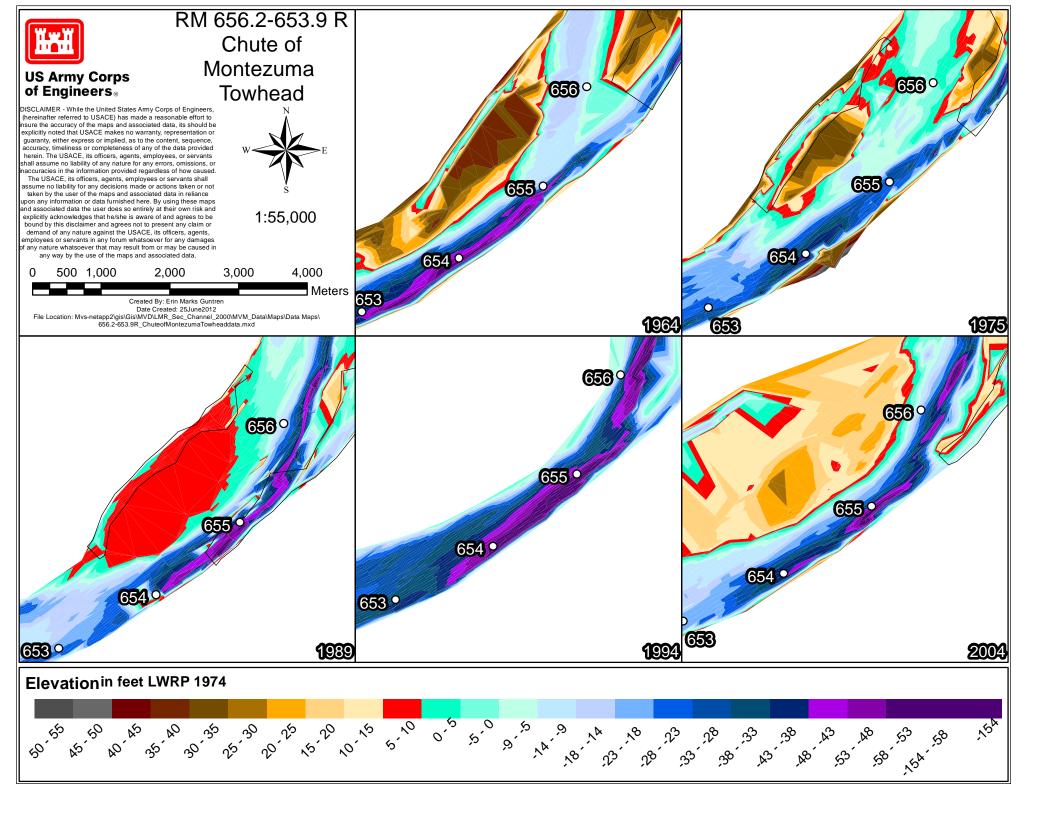
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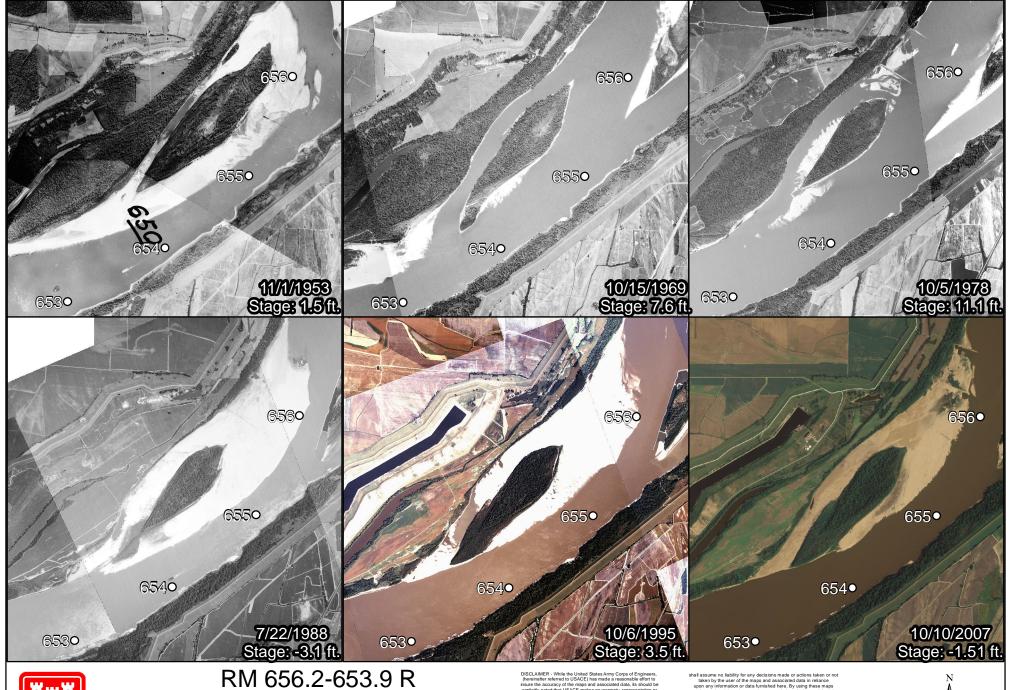
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2,400 1,200

3,600 4,800







Chute of Montezuma Towhead

1:55,000 Distance to gage: 8 river miles

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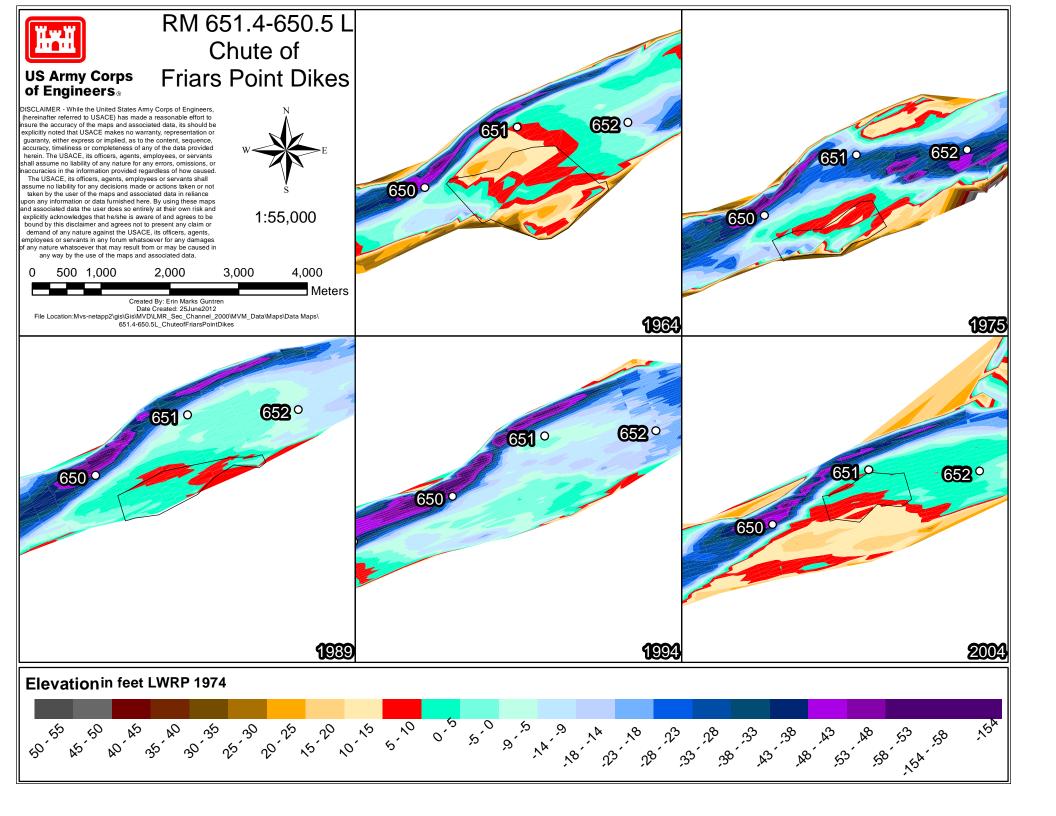
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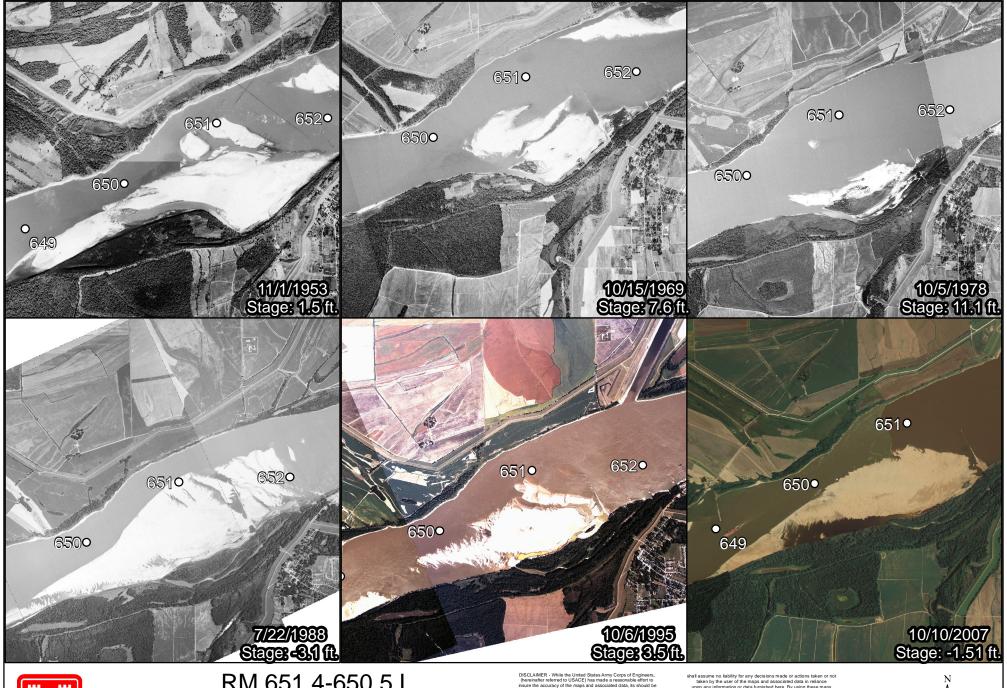


2,400 1,200 3,600

Meters

4,800







RM 651.4-650.5 L Chute of Friars Point Dikes

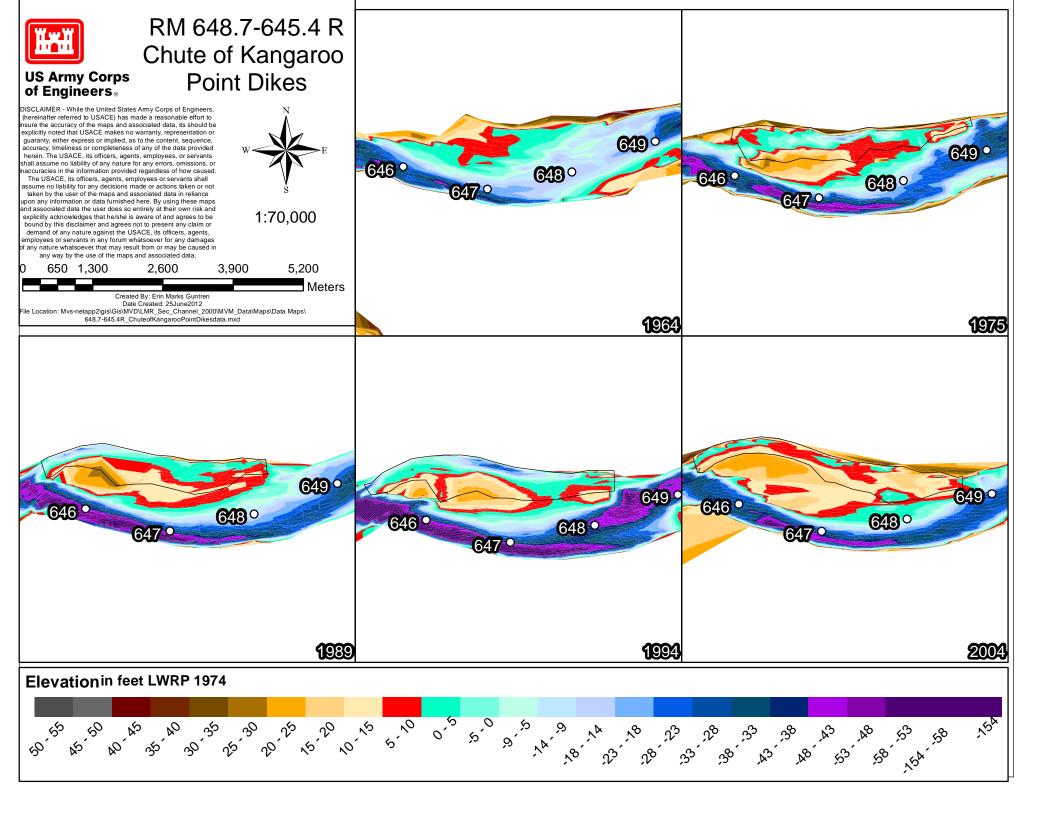
1:55,000 Distance to gage: 13 river miles

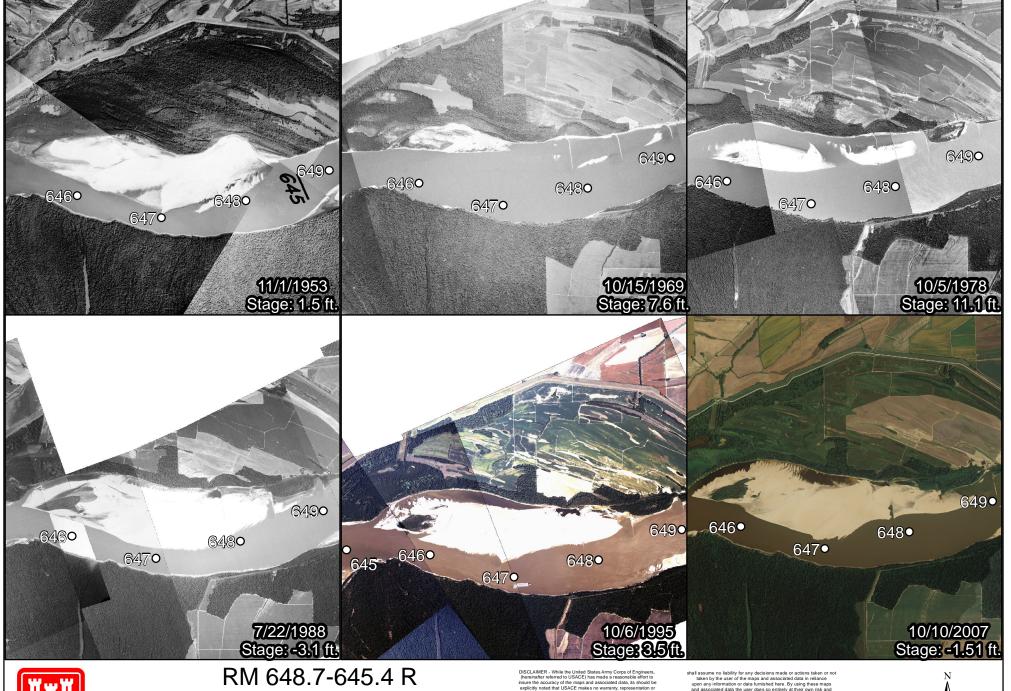
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600 1,200 2,400 3,600 4,800 Meters







Chute of Kangaroo Point Dikes

1:70,000 Distance to gage: 15 river miles

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1,500 750

3,000 4,500 6,000

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RM 644.0-643.4 L Chute at Old Town Bend

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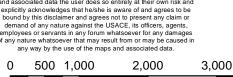
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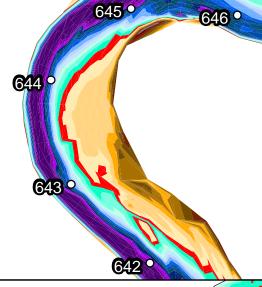
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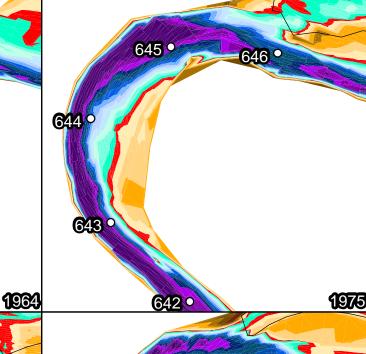
Meters

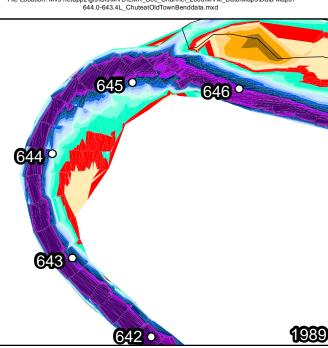


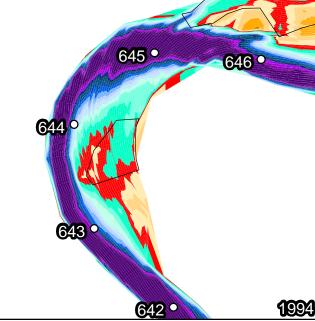
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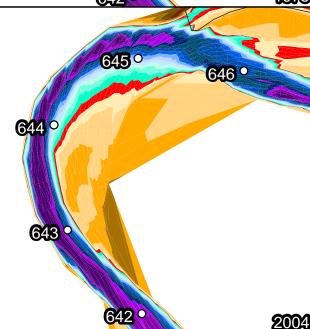
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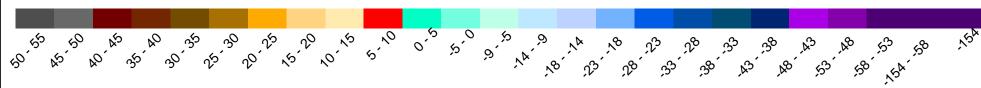


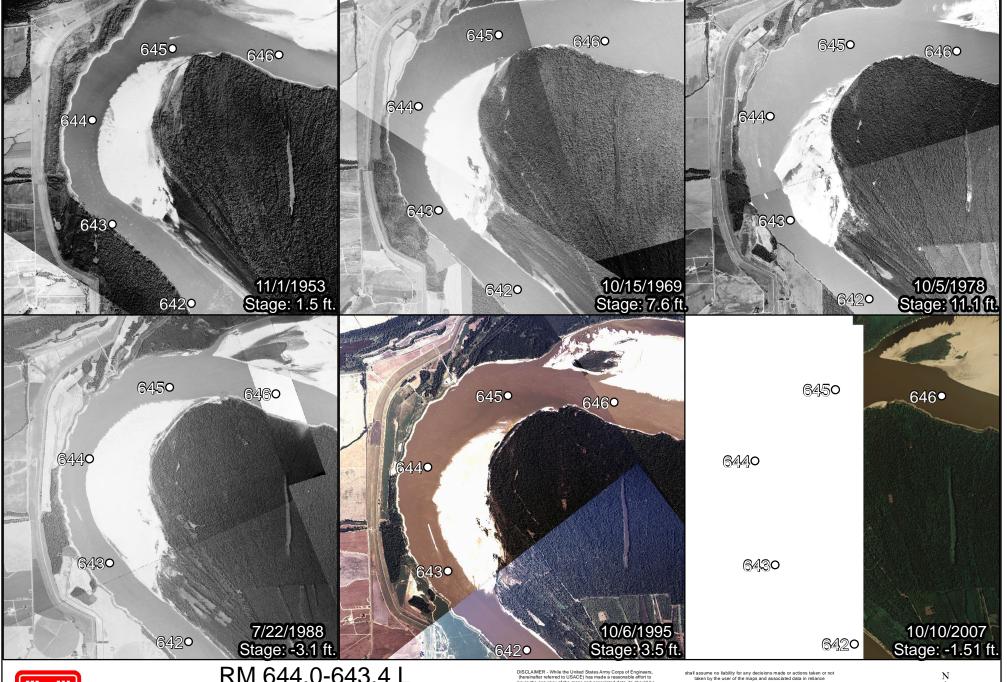






Elevation in feet LWRP 1974







RM 644.0-643.4 L Chute at Old Town Bend

1:55,000 Distance to gage: 19 river miles

1:55,000 Distance to gage. 19 liver mile

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600 1,200 2,400

3,600 4,8

4,800

US Army Corps of Engineers.

RM 640.6-637.5 L Chute of Island No. 63

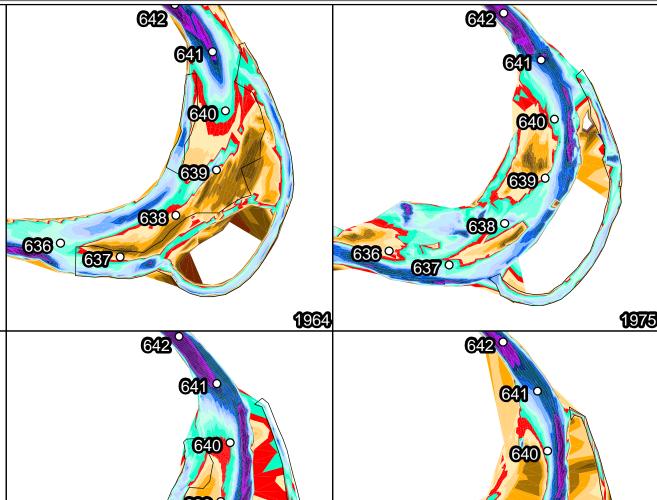
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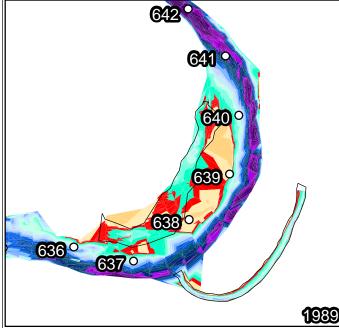
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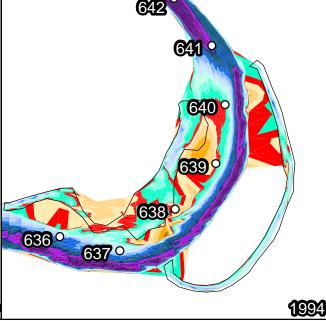


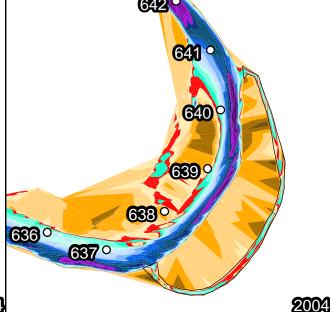
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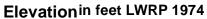


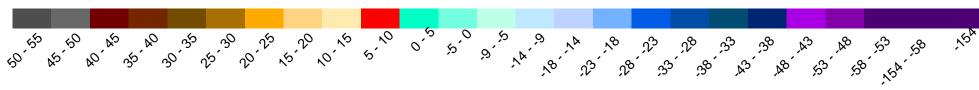


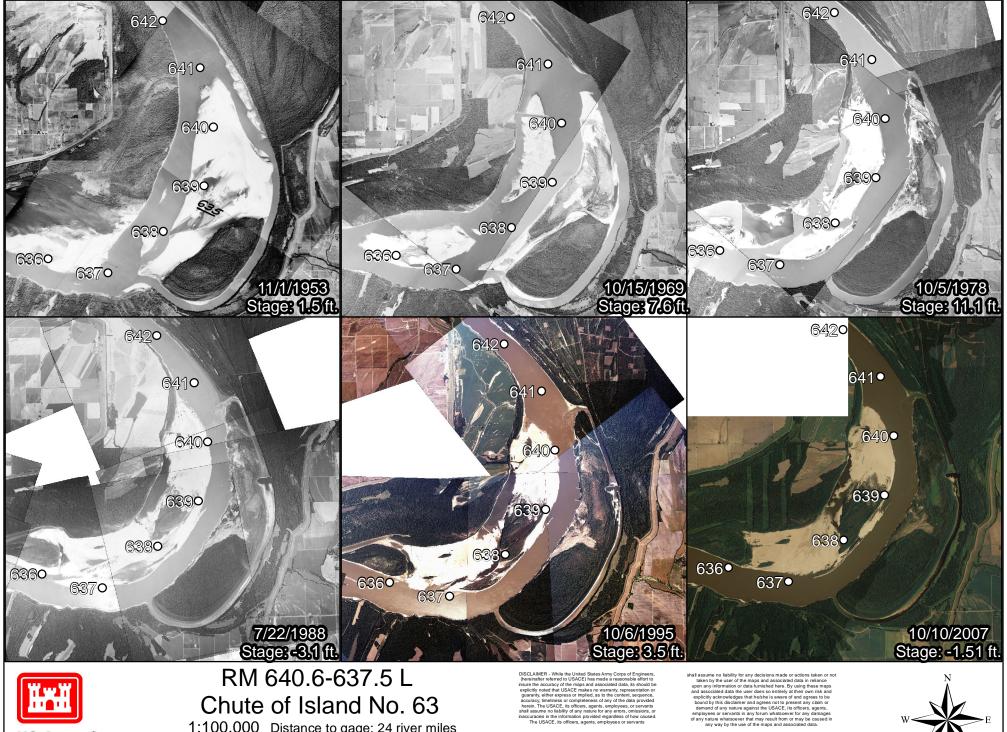














RM 640.6-637.5 L Chute of Island No. 63

1:100,000 Distance to gage: 24 river miles

1,100 2,200

4,400

6,600

8,800 Meters



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US Army Corps of Engineers

RM 640.1-635.2 R Chute of Island 62 Dikes

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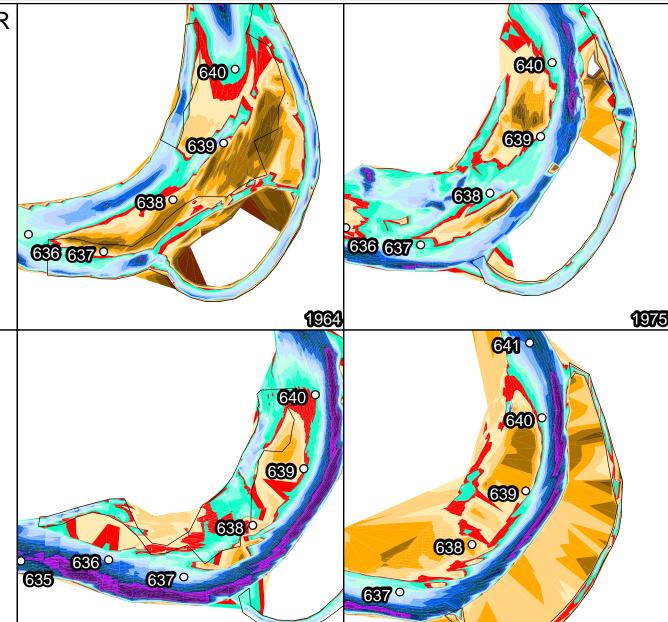
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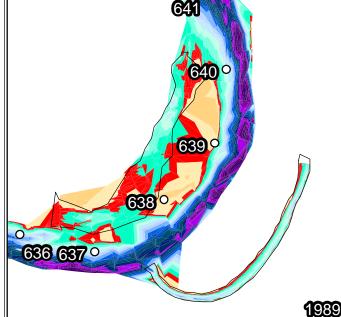
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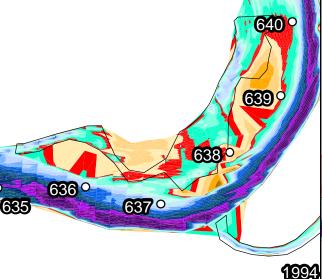


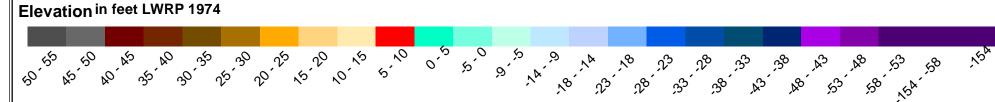
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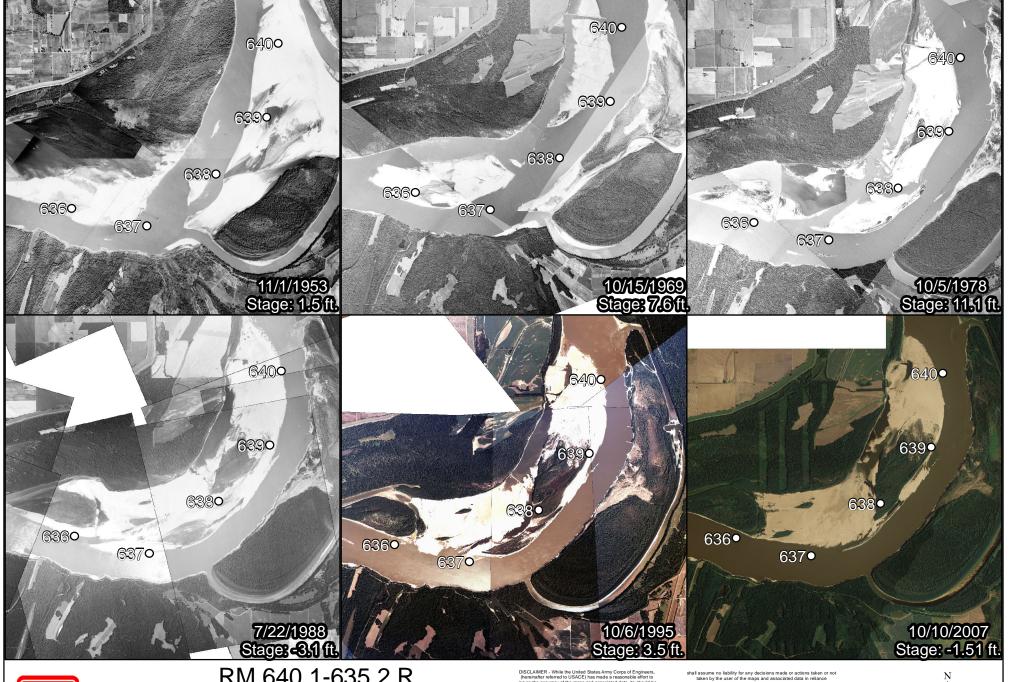


2004











RM 640.1-635.2 R Chute of Island 62 Dikes

1:80,000 Distance to gage: 25 river miles

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Date Created: 28.June2012
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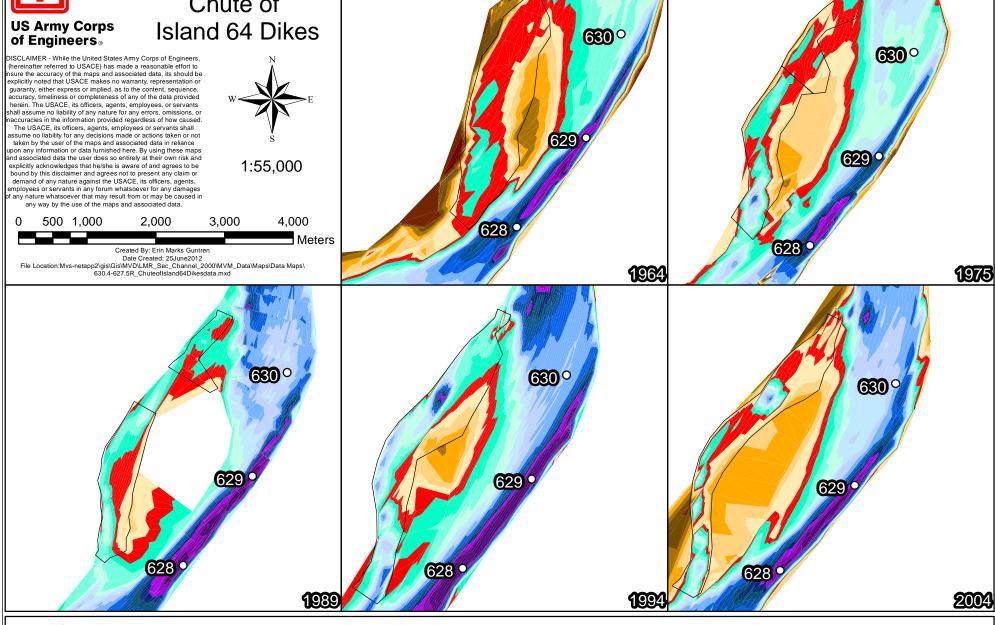


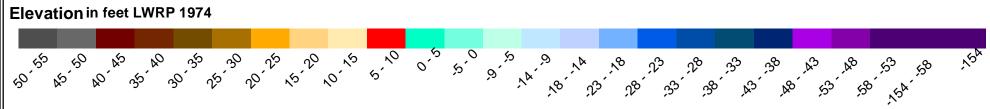
0 875 1,750

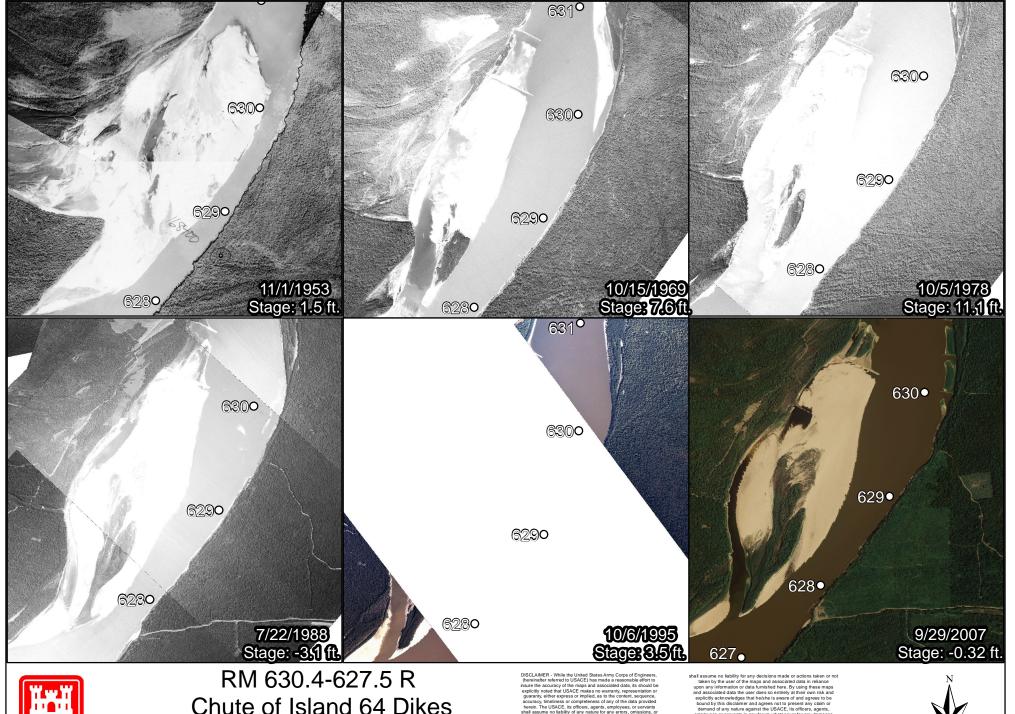
3,500 5,250

7,000

RM 630.4-627.5 R Chute of Island 64 Dikes









Chute of Island 64 Dikes

1:55,000 Distance to gage: 34 river miles

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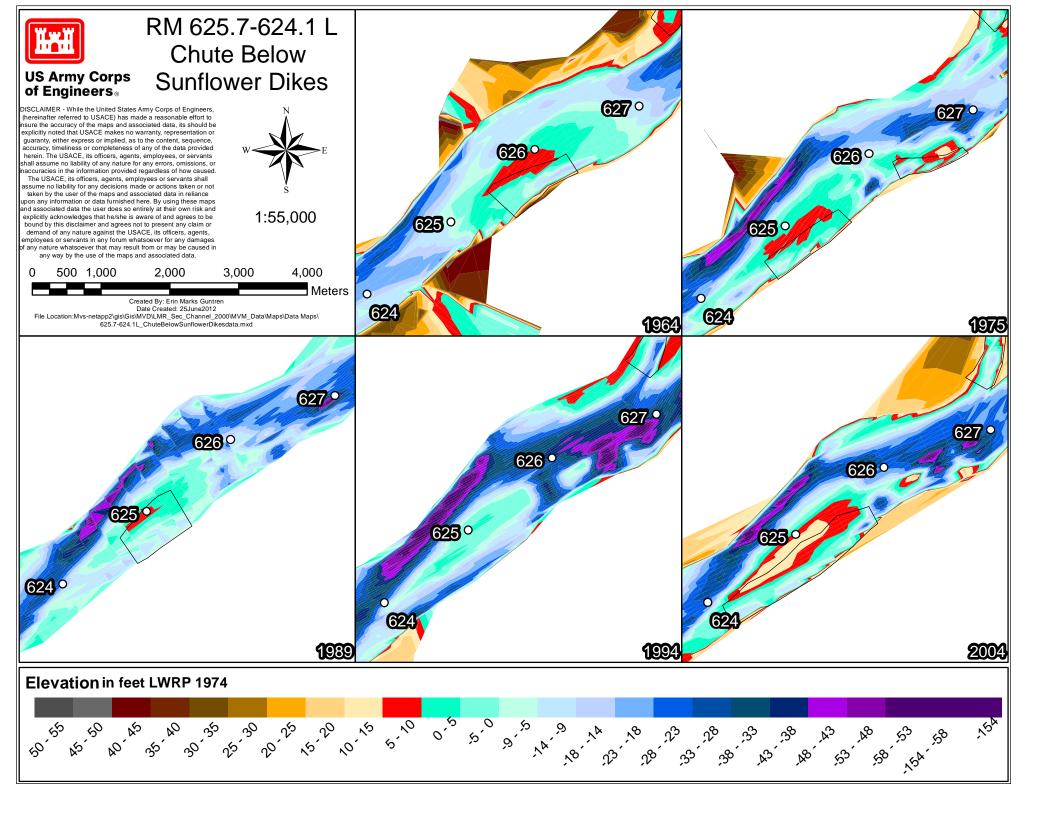
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2,400 1,200

4,800 3,600 Meters







Chute Below Sunflower Dikes

1:55,000 Distance to gage: 38 river miles

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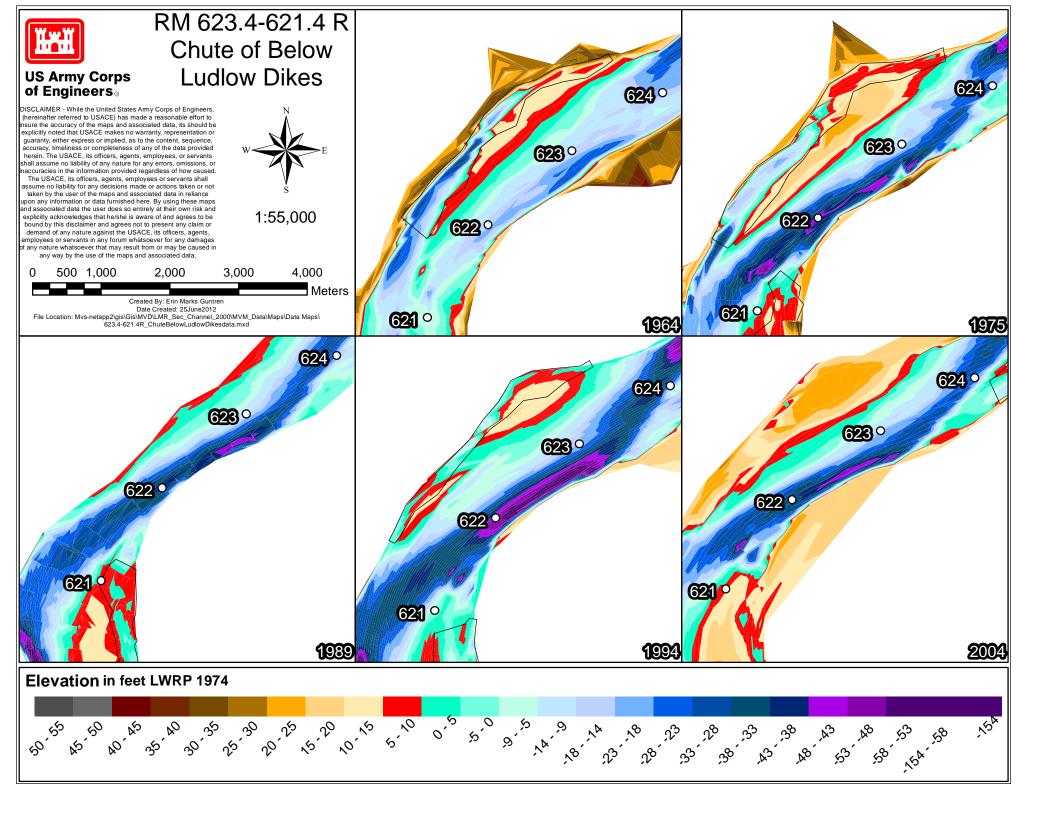
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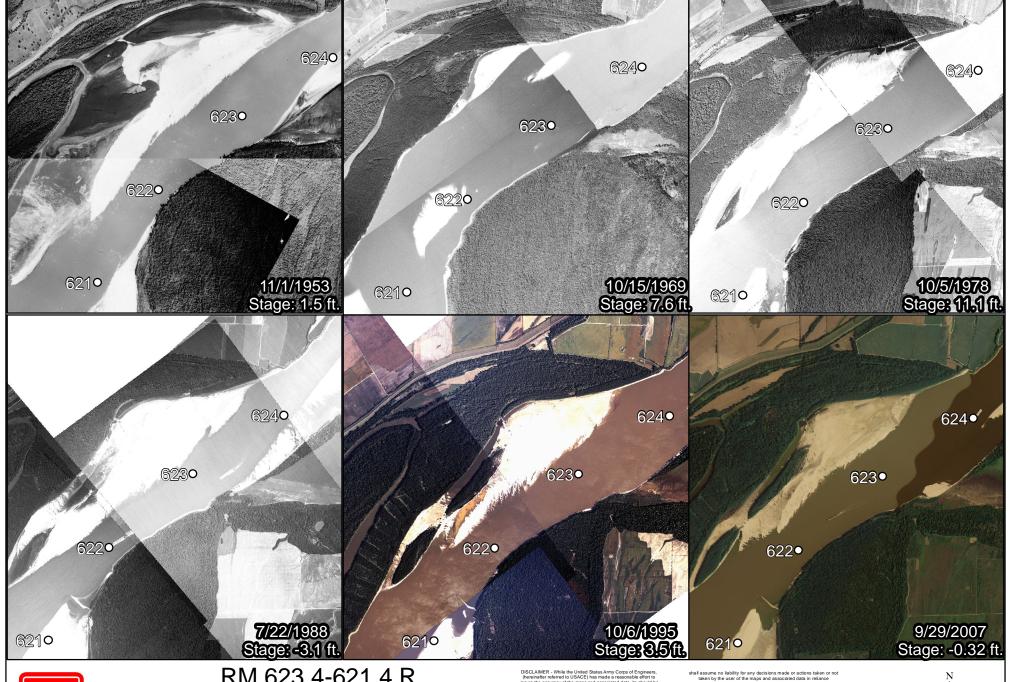
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2,400 1,200

4,800 3,600







RM 623.4-621.4 R Chute of Below Ludlow Dikes

1:55,000 Distance to gage: 41 river miles

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Date Created: 29June2012
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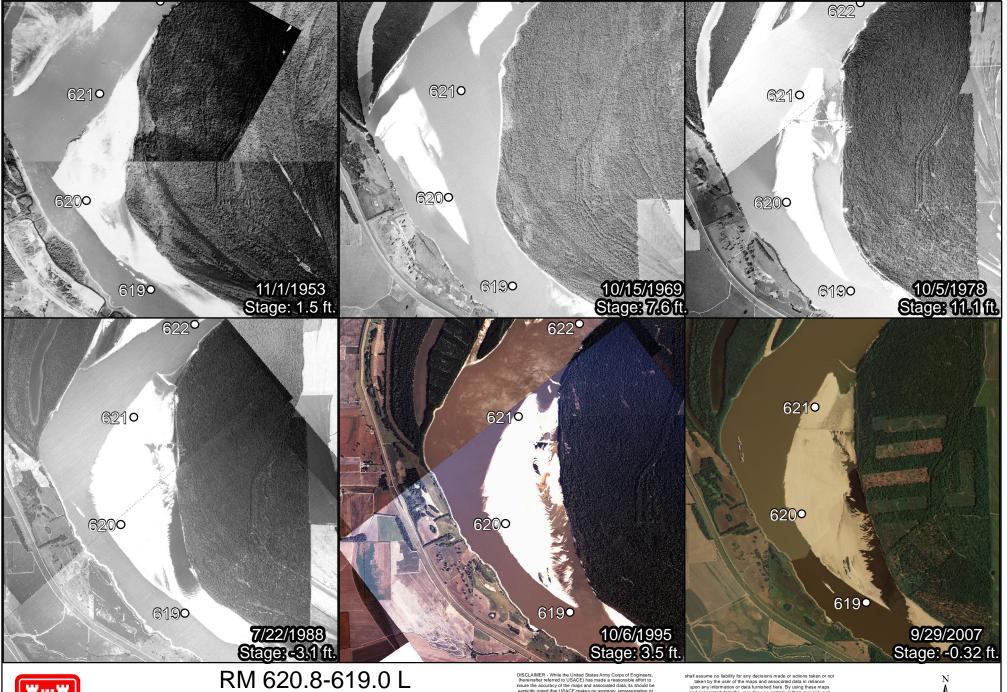
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600 1,200 2,400 3,600

4,800

RM 620.8-619.0 L Chute of **US Army Corps** Island 67 Dikes of Engineers. **621** ° DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 500 1,000 2,000 3,000 4,000 Meters Created By: Erin Marks Guntrer Date Created: 25June2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\ 1964 1975 620.8-619.0L_ChuteofIsland67Dikesdata.mxd 621 ° 1989 1994 2004 **Elevation in feet LWRP 1974**





RM 620.8-619.0 L Chute of Island 67 Dikes

1:55,000 Distance to gage: 43 river miles

Created by: Erin Marks Guntren
Date Created: 10February2011
File Path: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVM_Data\Maps\Data Maps\
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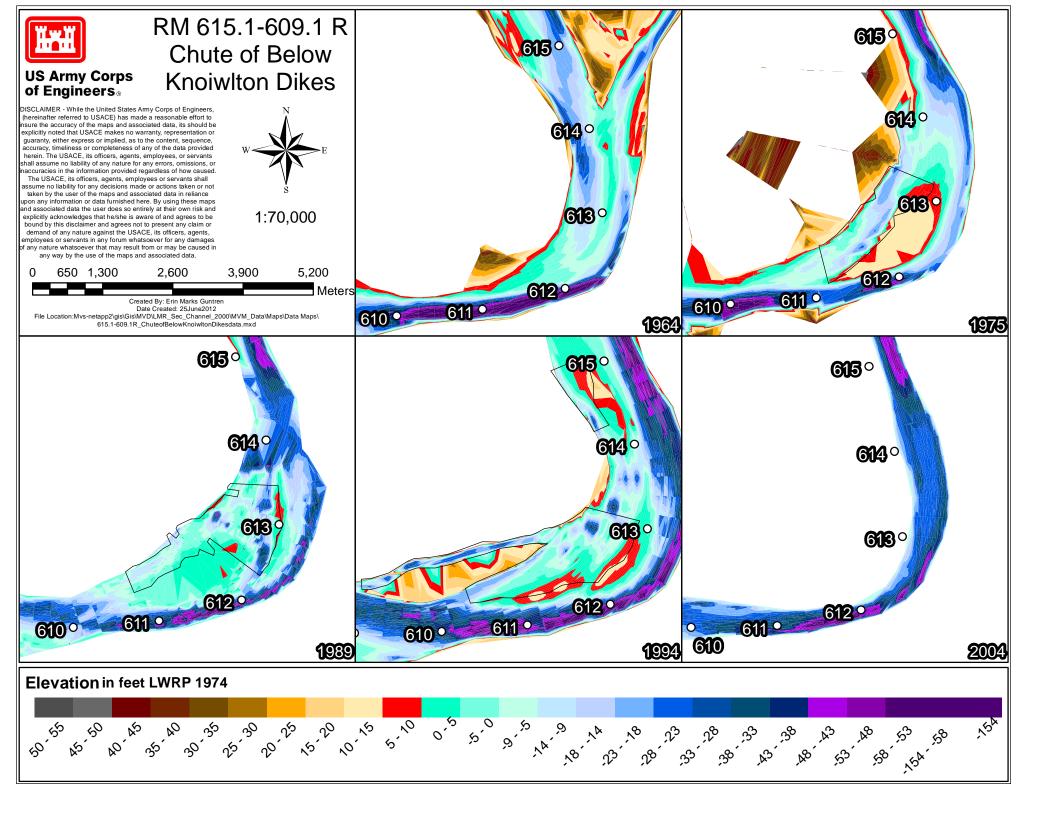
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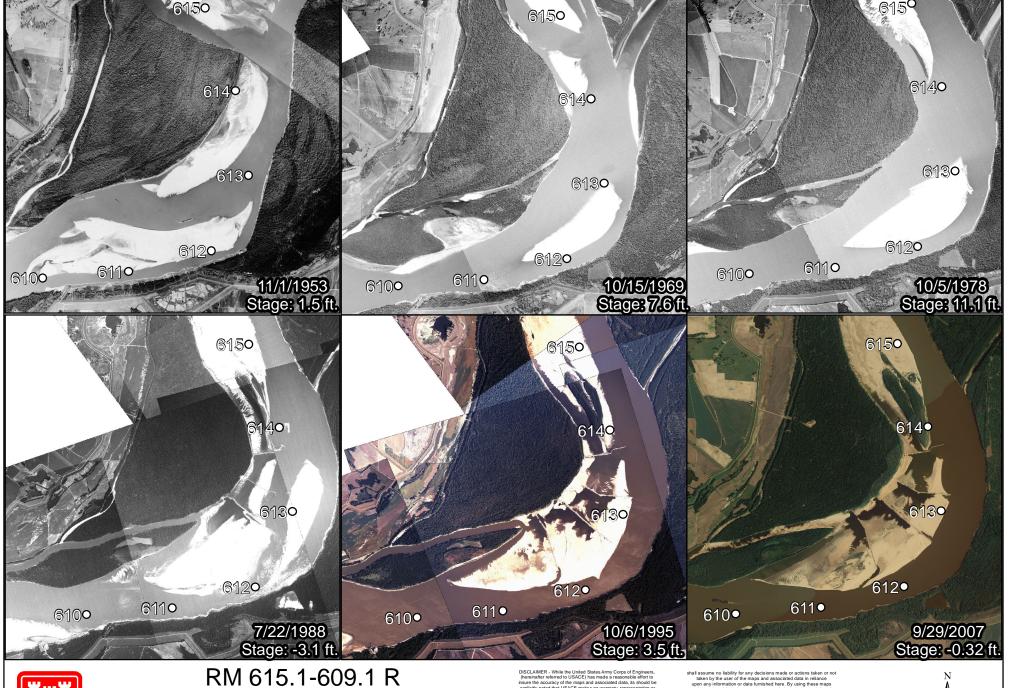
3,600



600 1,200 2,400

4,800







RM 615.1-609.1 R Chute of Below Knoiwlton Dikes

US Army Corps of Engineers®

1:70,000 Distance to gage: 50 river miles

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Date Created: 29June2012
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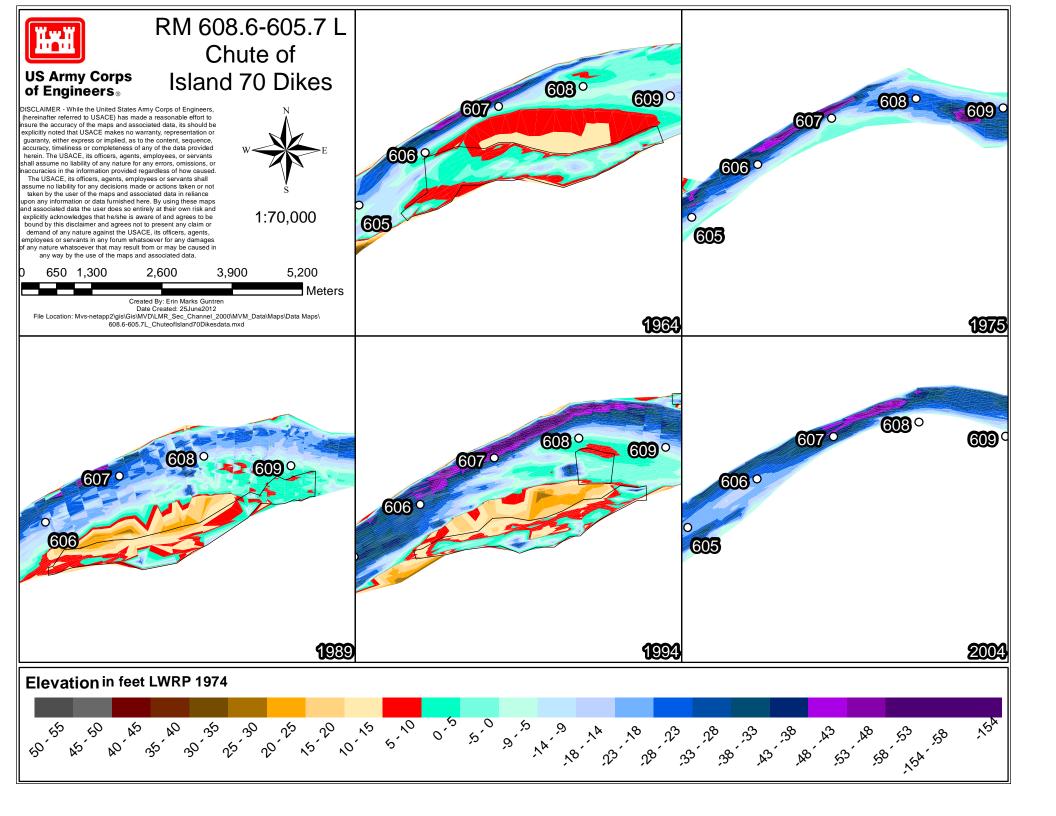


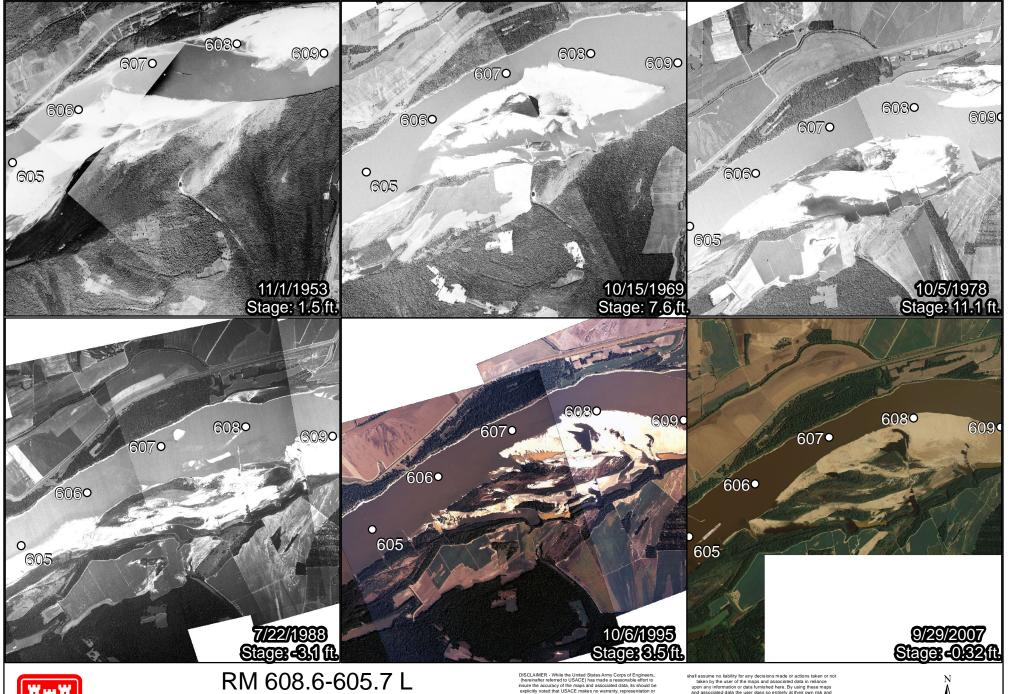
0 750 1,500

4,500

3,000

6,000







RM 608.6-605.7 L Chute of Island 70 Dikes

1:70,000 Distance to gage: 55 river miles

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Date Created: 29June2012
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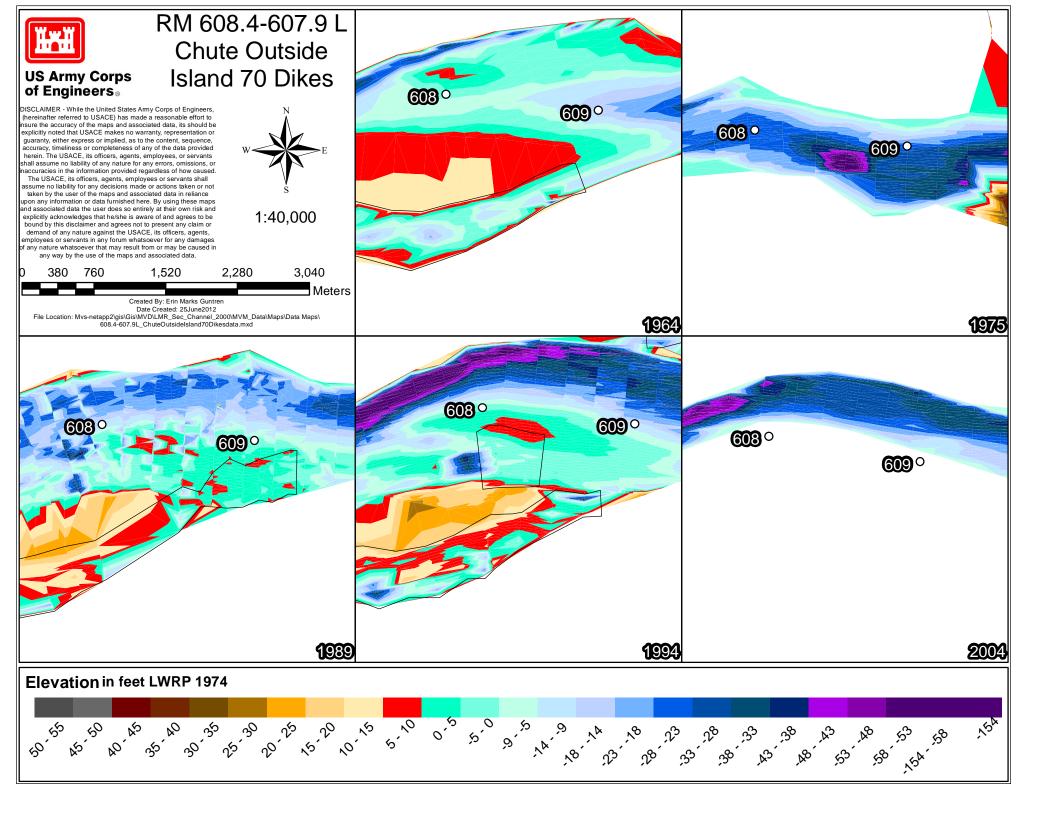


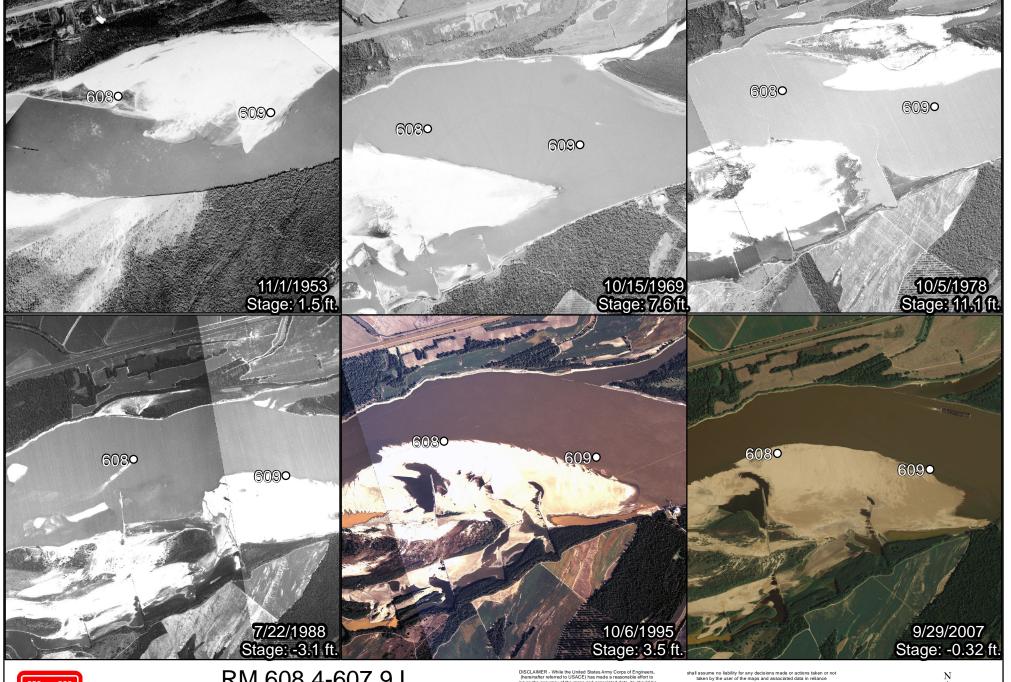
0 750 1,500

4,500

3,000

6,000







RM 608.4-607.9 L Chute Outside Island 70 Dikes 1:40,000 Distance to gage: 55 river miles

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1,780 3,560 890 2,670 Meters

Appendix H: Reach H – River Miles 596-552 Vicksburg District

Nine secondary channels were identified in Reach H (see below). Only one secondary channel was surveyed in all four decades and thus there is no Reach Summary for this section of river.

Table H1. Secondary channels and their upstream river mile for Reach H; the channel in bold is the only channel with data for all four decades.

Name	River Mile	Name	River Mile
Chute of Victoria Bend Dikes	596.1R	Chute of Choctaw Bar	564.5R
Chute of White River Landing Dikes	593.0R	Chute Above Huntington Point	559.6L
Chute of Terrene Dikes	590.5L	Chute At Huntington Point	554.5L
Chute 1 of Malone Field Dikes	586.6R		
Chute 2 of Malone Field Dikes	583.0R		
Chute of Below Prentiss Dikes	578.2L		

Table H2. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach H. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

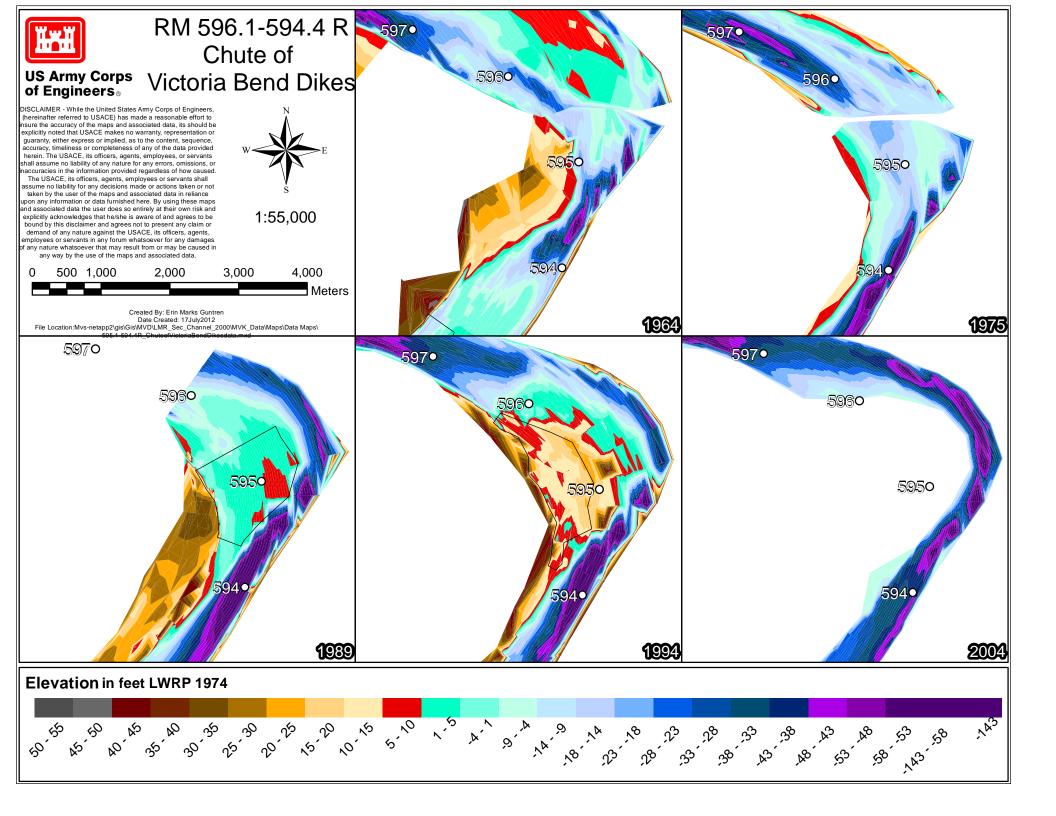
Secondary Channel	River	Voor	Cvrg.		Area	(Acres)		Volume (yd³)		
Secondary Channel	Miles	Year		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Victoria Bend Dikes	596.1- 594.4R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Victoria Bend Dikes	596.1- 594.4R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Victoria Bend Dikes	596.1- 594.4R	1989	100%	10	60	250	350	364,000	4,167,000	
Chute of Victoria Bend Dikes	596.1- 594.4R	1994	100%	0	0	10	80	0	301,000	
Chute of Victoria Bend Dikes	596.1- 594.4R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of White River Landing Dikes	593- 589.4R	1964	100%	340	460	600	700	8,091,000	17,508,000	
Chute of White River Landing Dikes	593- 589.4R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of White River Landing Dikes	593- 589.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of White River Landing Dikes	593- 589.4R	1994	100%	0	0	0	0	0	0	
Chute of White River Landing Dikes	593- 589.4R	2000	100%	0	0	0	0	0	0	
Chute of Terrene Dikes	590.5- 588.8L	1964	100%	0	0	0	0	0	0	
Chute of Terrene Dikes	590.5- 588.8L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Terrene Dikes	590.5- 588.8L	1989	100%	0	0	0	0	0	0	
Chute of Terrene Dikes	590.5- 588.8L	1994	100%	0	0	10	90	0	331,000	
Chute of Terrene Dikes	590.5- 588.8L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute 1 of Malone Field Dikes	586.6- 584.2R	1964	100%	180	300	470	580	4,369,000	11,845,000	
Chute 1 of Malone Field Dikes	586.6- 584.2R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute 1 of Malone Field Dikes	586.6- 584.2R	1989	100%	0	0	0	0	0	0	
Chute 1 of Malone Field Dikes	586.6- 584.2R	1994	100%	0	0	0	0	0	0	

Casandan, Channal	River	Voor	Course		Area	(Acres)		Volun	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft		
Chute 1 of Malone Field Dikes	586.6- 584.2R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data		
Chute 2 of Malone Field Dikes	583- 580.5R	1964	100%	10	30	50	60	200,000	945,000		
Chute 2 of Malone Field Dikes	583- 580.5R	1975	80%	180	240	290	350	4,414,000	9,150,000		
Chute 2 of Malone Field Dikes	583- 580.5R	1989	100%	0	0	0	0	0	0		
Chute 2 of Malone Field Dikes	583- 580.5R	1994	100%	0	0	0	0	0	0		
Chute 2 of Malone Field Dikes	583- 580.5R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data		
Chute of Below Prentiss Dikes	578.2- 576L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data		
Chute of Below Prentiss Dikes	578.2- 576L	1975	80%	130	160	190	210	2,763,000	5,776,000		
Chute of Below Prentiss Dikes	578.2- 576L	1989	99%	70	120	170	240	1,151,000	3,973,000		
Chute of Below Prentiss Dikes	578.2- 576L	1994	90%	50	110	150	190	1,030,000	3,404,000		
Chute of Below Prentiss Dikes	578.2- 576L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data		
Chute of Choctaw Bar	564.5- 556.5R	1964	100%	870	1,22 0	1,560	1,950	24,404,00 0	47,982,000		
Chute of Choctaw Bar	564.5- 556.5R	1975	98%	620	870	1,070	1,230	18,242,00 0	35,494,000		
Chute of Choctaw Bar	564.5- 556.5R	1989	100%	220	360	590	830	5,201,000	14,781,000		
Chute of Choctaw Bar	564.5- 556.5R	1994	100%	220	340	540	760	5,113,000	13,854,000		
Chute of Choctaw Bar	564.5- 556.5R	2000	100%	0	0	0	0	0	0		
Chute Above Huntington Point	559.6- 558L	1964	100%	10	20	30	80	133,000	750,000		
Chute Above Huntington Point	559.6- 558L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data		
Chute Above Huntington Point	559.6- 558L	1989	100%	0	0	0	0	0	0		
Chute Above Huntington Point	559.6- 558L	1994	100%	0	0	0	0	0	0		
Chute Above Huntington Point	559.6- 558L	2000	100%	0	0	0	0	0	0		

Secondary Channel	River	Year	Cvrg.		Area	(Acres)		Volume (yd³)	
Secondary Charmer	Miles	Ibai	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute At Huntington Point	554.5- 553.6L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute At Huntington Point	554.5- 553.6L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute At Huntington Point	554.5- 553.6L	1989	100%	0	0	0	0	0	0
Chute At Huntington Point	554.5- 553.6L	1994	100%	0	0	0	10	0	35,000
Chute At Huntington Point	554.5- 553.6L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Vicksburg District: Reach H US Army Corps of Engineers * River Miles: 596-552 Chute of Victoria Bend Dikes Chute of White River Landing Dikes -Chute of Terrene Dikes **Chute 1 of Malone Field Dikes Chute 2 of Malone Field Dikes** Beulah Chute of Below Prentiss Dikes **Chute Above Cypress Bend** Benoit Chute of Choctaw Bar (159) **Chute Above Huntington Point Chute at Huntington Point** Chute at Georgetown Bend HINGTON **River Miles Location Map** 2000 Outlines KS МО 1990 Outlines OK 1980 Outlines AR 1970 Outlines AL TX 1960 Outlines FLE LA Mississippi River Created By: Erin Marks Guntren Date Created: 1November2013

Figure H1. Vicksburg District Reach H river miles 596-552.



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RM 596.1-594.4 R Chute of Victoria Bend Dikes 1:55,000 Distance to gage: 51 river miles

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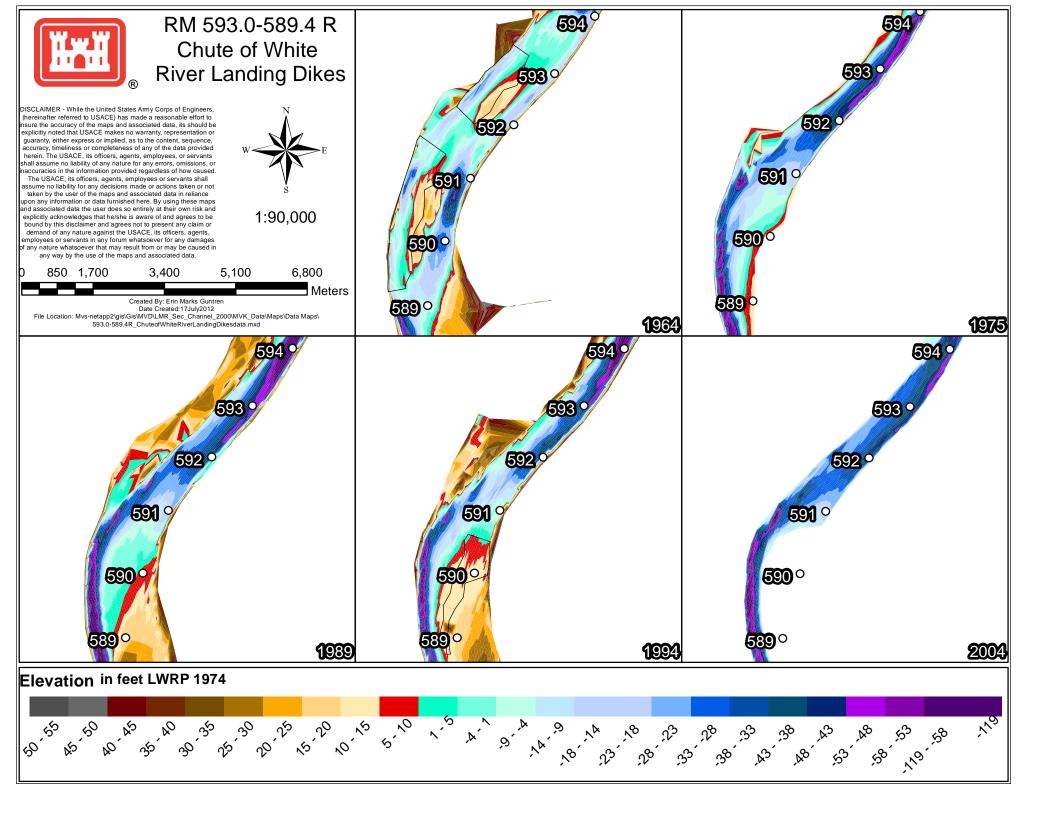
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Date Created: 16July2012
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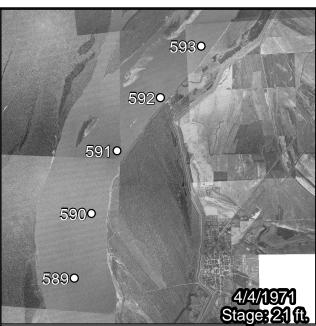
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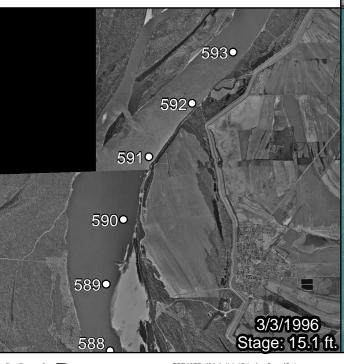
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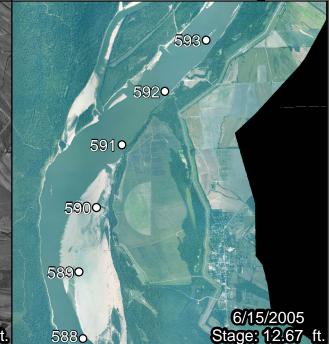


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US Army Corps

of Engineers.

RM 593.0-589.4 R Chute of White River Landing Dikes 1:90,000 Distance to gage: 39 river miles

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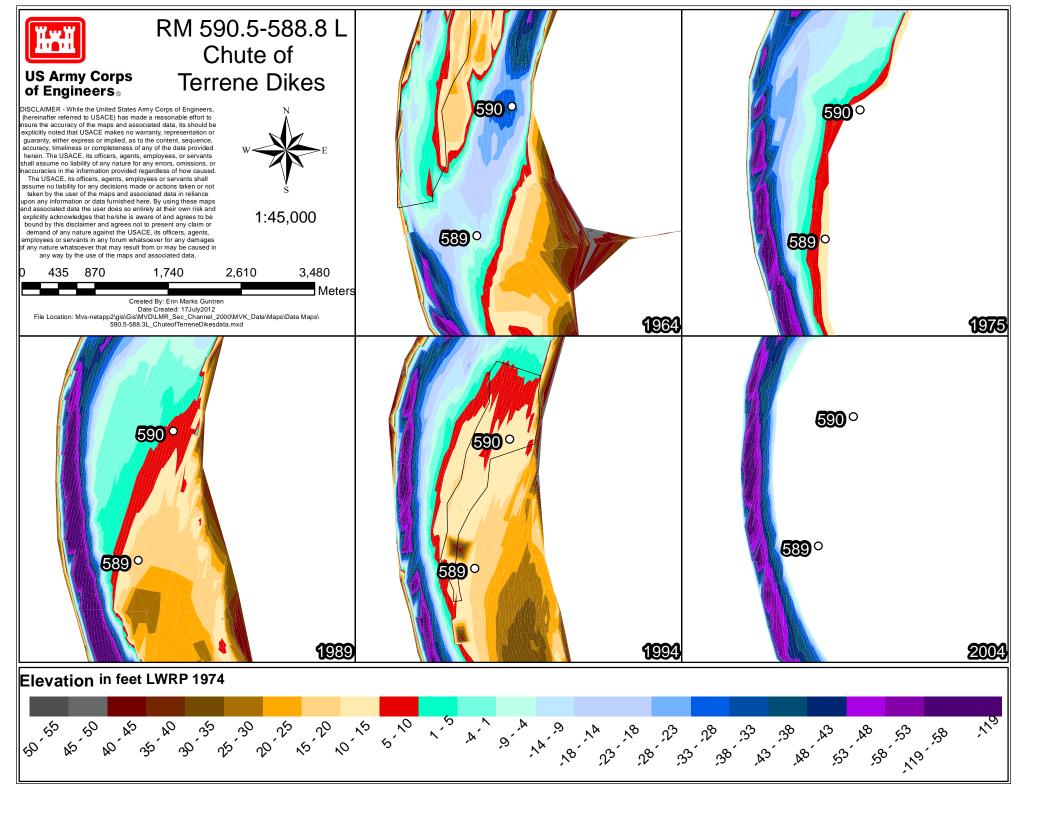


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593.0-589.2R_Chuteof\WhiteRiverLandingDikesphotos.mxd 1,000 2,000

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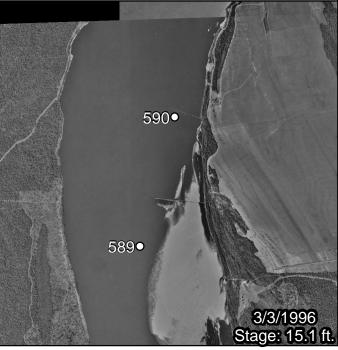
8,000



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RM 590.5-588.8 L Chute of Terrene Dikes 1:45,000 Distance to gage: 36 river miles DISCLAIMER - While the United States Army Corps of Engineers, (neerinather referred to USACE) has made a reasonable effort of the USACE has made a reasonable effort of the property of the maps and associated data, it is should be used to be u

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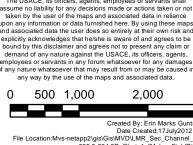
RM 586.6-584.2 R Chute 1 of Malone Field Dikes

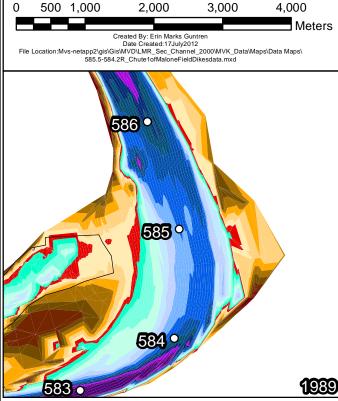
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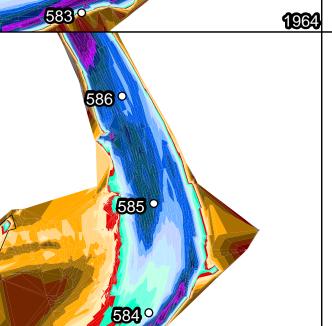
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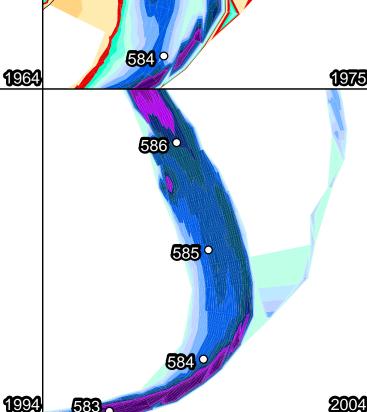
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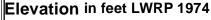


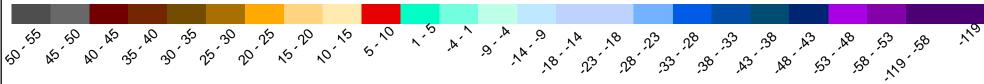


586°

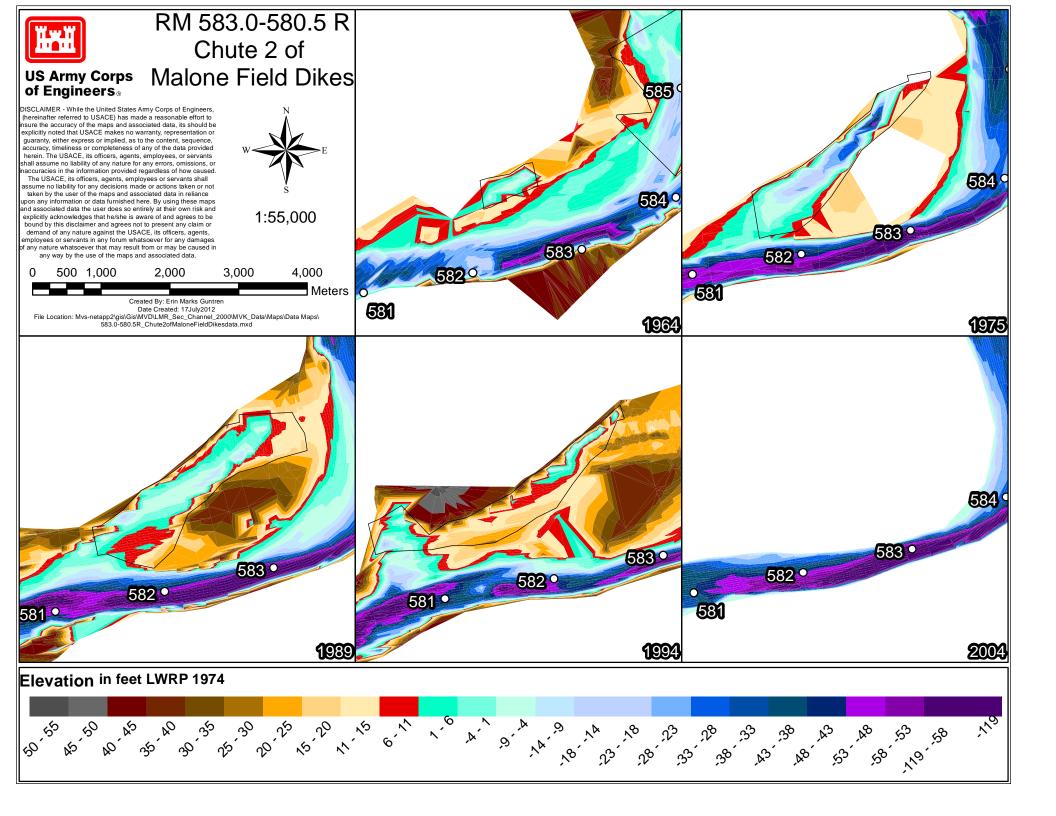


585 °





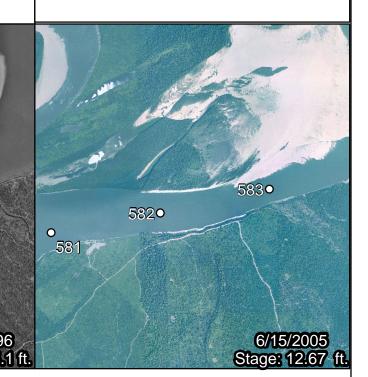
586° 5850 Photos are missing from dataset. Photos are missing from dataset. 5840 4/4/1971 Stage: 21 ft. 12/6/1952 Stage: 5.5 ft. 10/15/1969 Stage: 7.6ff. 5830 586° 586° 5860 585° 585° 5850 5840 584° 5840 9/27/1985 Stage: 3.9 ft. 3/3/1996 6/15/2005 5830 583**•** 5830 Stage: 15.1 ft. Stage: 12.67 ft. DISCLAIMER - While the United States Army Corps of Engineers, (hereinather referred to USACE) has made a reasonable effort to nauer the accuracy of the maps and associated data, its should be accurated the second of the second shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in relaince the same of the RM 586.6-584.2 R Chute 1 of Malone Field Dikes 1:55,000 Distance to gage: 31 river miles **US Army Corps** Created by: Erin Marks Guntrer 2,400 4,800 of Engineers. 1,200 3,600 Date Created: 16July2012 $\label{lem:file_path:Mvs-netapp2} File \ Path: Mvs-netapp2 \\ \ Gis\ MVD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps\ Data \ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ LMR_Sec_Channel_2000\ MVK_Data\ Maps \\ \ Path: Mvs-netapp2 \\ \ Gis\ MvD\ MvS_Data\ Mvs-netapp2 \\ \ Gis\ Mvs-netapp2 \\ \ Gis\ MvS_Data\ Mvs-netapp2 \\ \ Gis\ Mvs-net$ Meters 585.8-584.2R_Chute1ofMaloneFieldDikesphotos.mxd



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RM 583.0-580.5 R Chute 2 of Malone Field Dikes 1:55,000 Distance to gage: 31 river miles

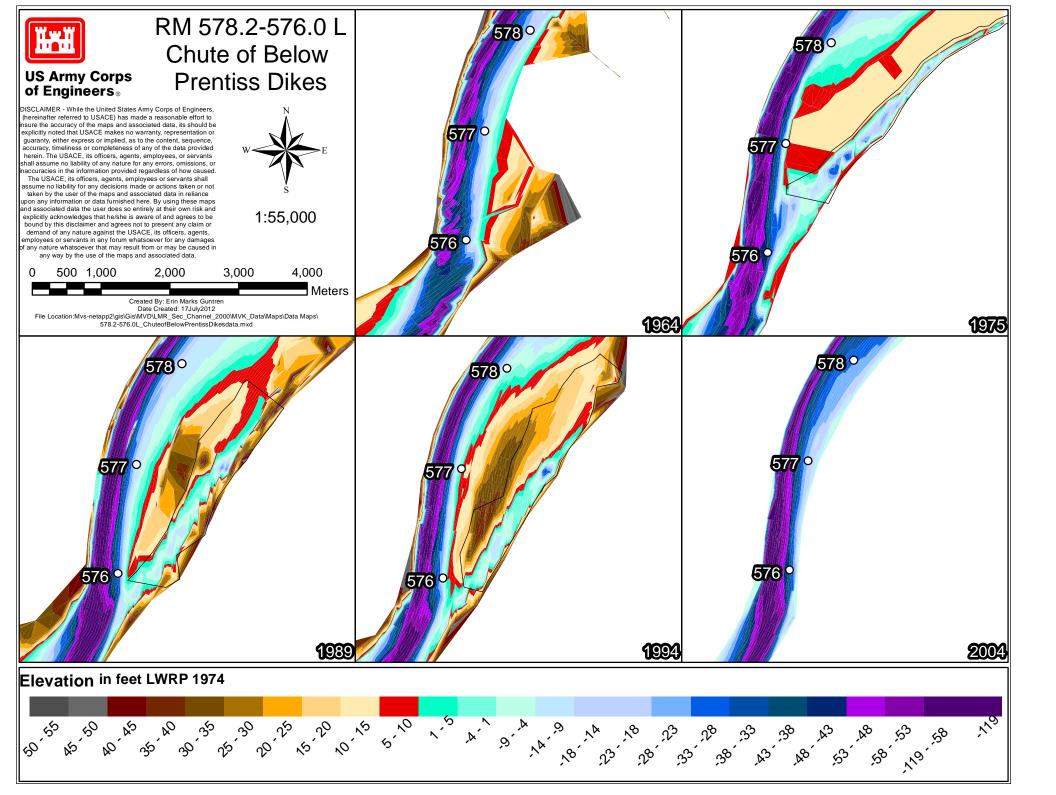
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583.0-580.5R_Chute2ofMaloneFieldDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, (heerinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be engineering to the engineering the state of the engineering the express of implied, as to the content, sequence, accuracy, timethese or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants hall assume no bability of any nature for any errors, ormisions, or inaccuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or everwants.

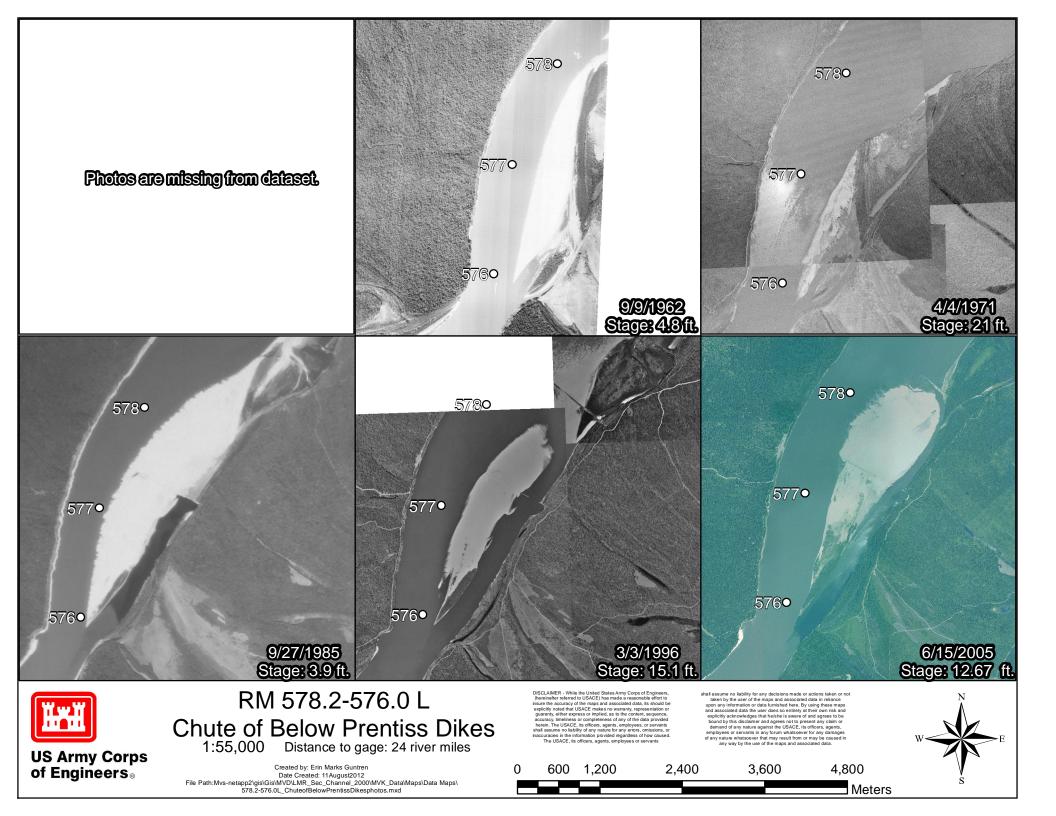
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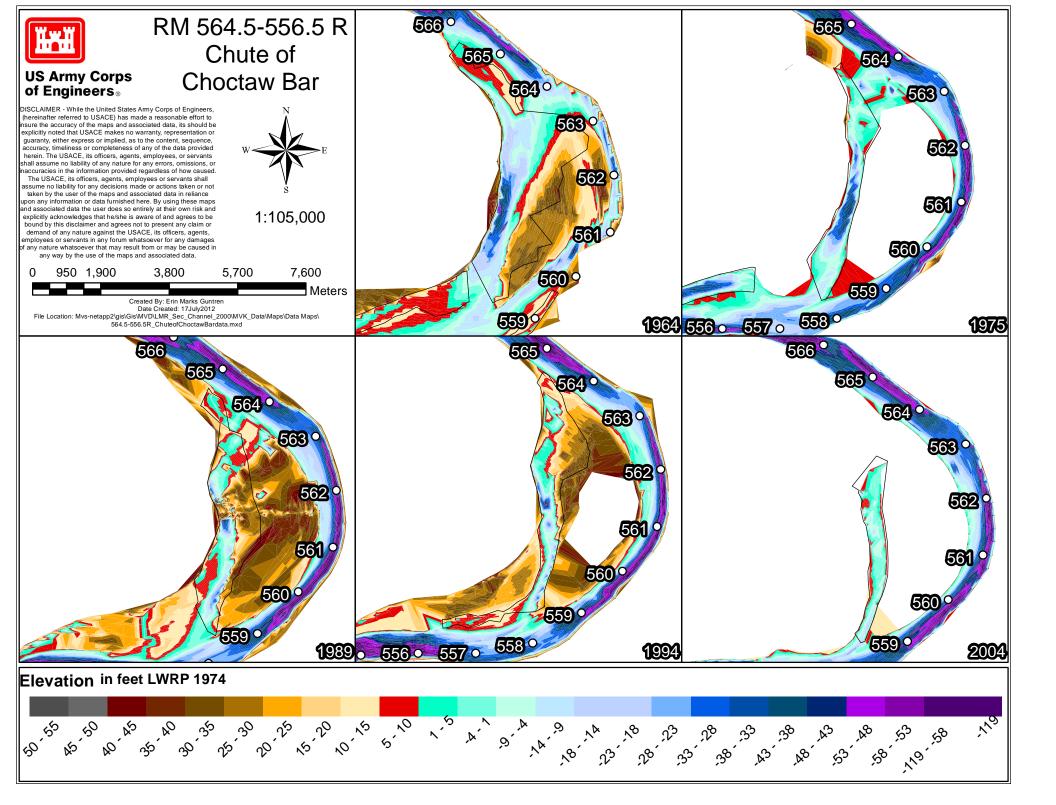


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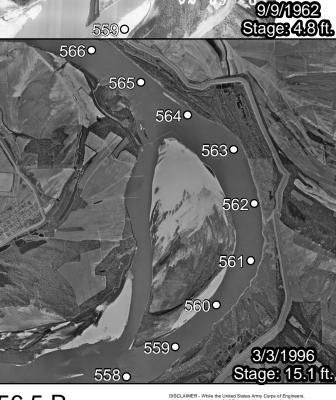


565° 564° 563°

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5620

5610





RM 564.5-556.5 R
Chute of Choctaw Bar
1:105,000 Distance to gage: 12 river miles

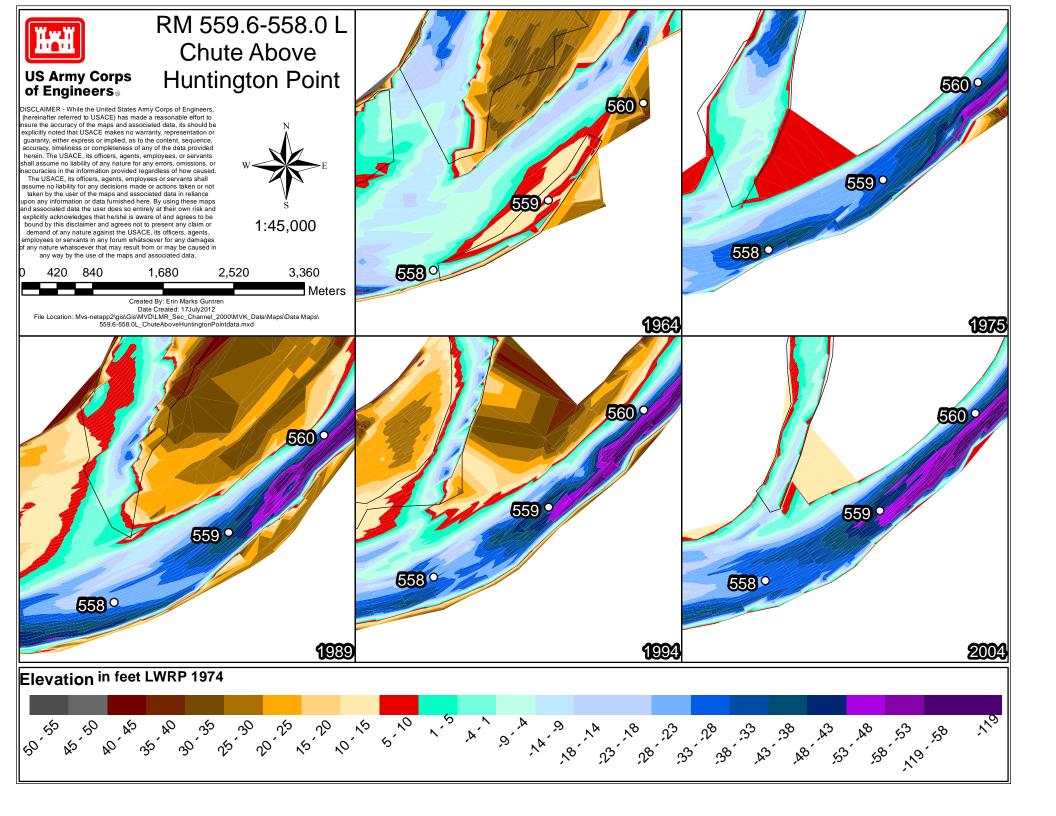
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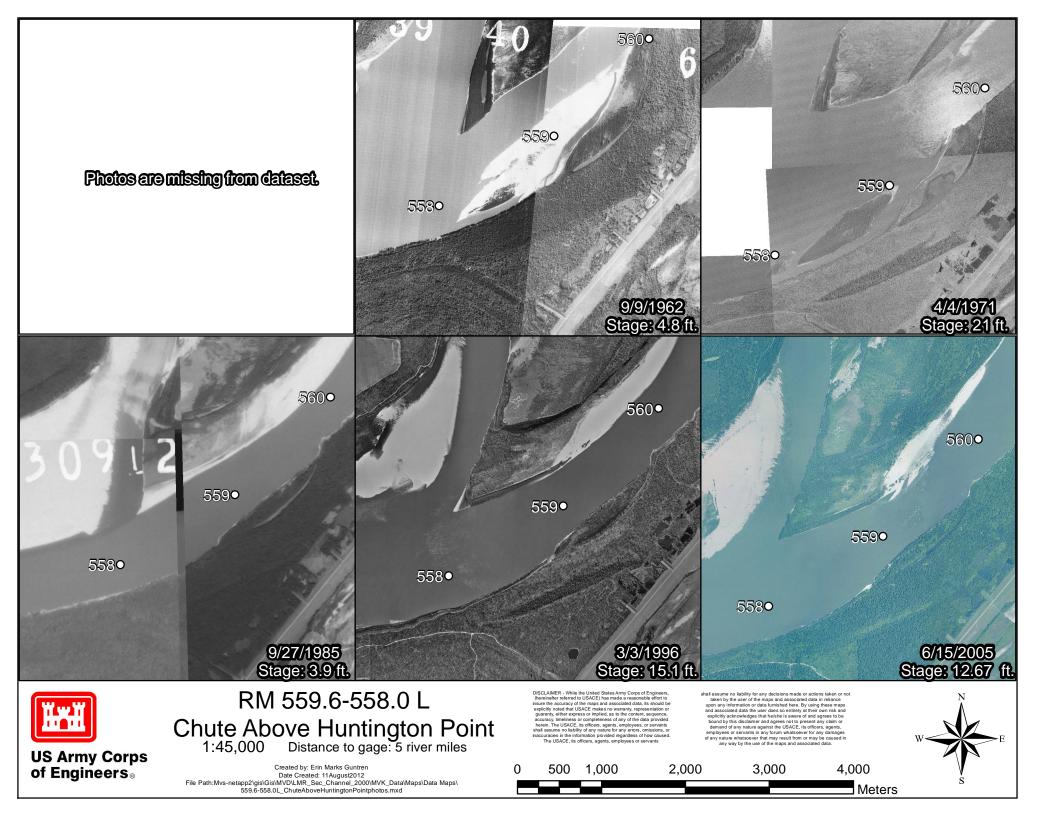


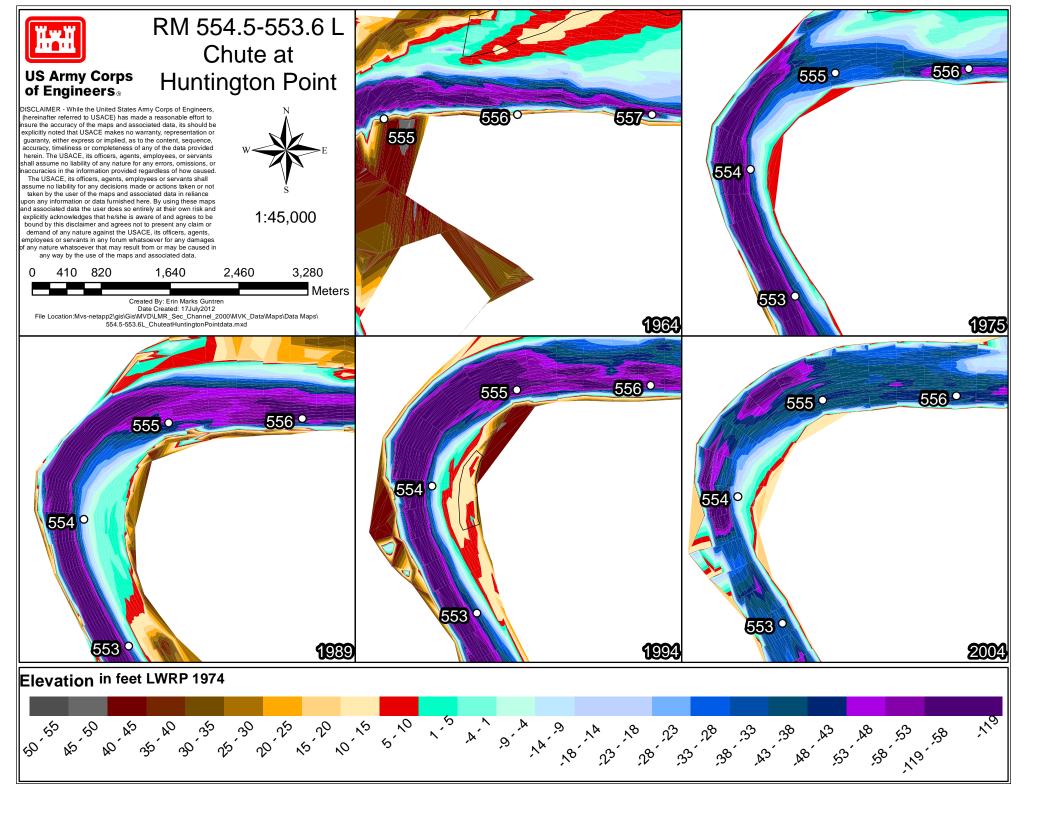
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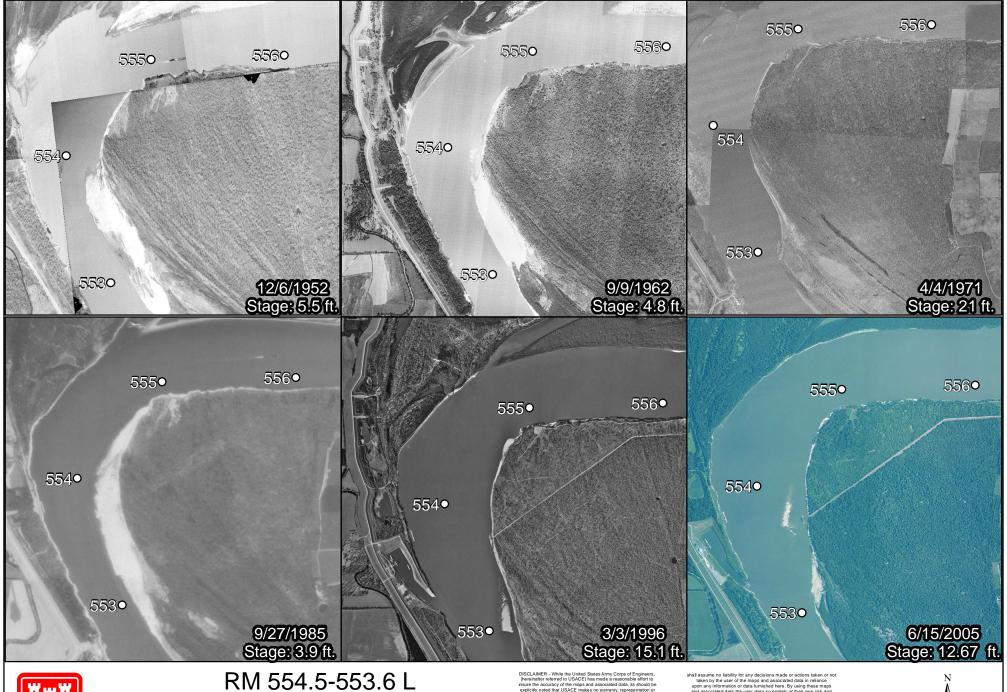
4,600 6,900

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RM 554.5-553.6 L Chute At Huntington Point 1:45,000 Distance to gage: 0 river miles

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Date Created: 11 August2012
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554.5-553.6L_ChuteAtHuntingtonPointphotos.mxd

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Appendix I: Reach I – River Miles 552-494 Vicksburg District

Eighteen secondary channels were identified in Reach I (see below). Only two secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table I1. Secondary channels and their upstream river mile for Reach I; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute at Georgetown Bend	551.0L	Chute Below Leland Bar Dikes	535.9R	Chute at Kentucky Bend	518.3L
Chute of Island 82	549.0R	Chute of Island 84 Dikes	534.1L	Chute of Leota Dikes	514.3L
Chute at Miller Bend	548.8L	Chute of Lakeport Towhead	529.0L	Chute of Cracraft Lower Dikes	510.3R
Chute of Island 82-Miller Bend Dikes	545.4R	Chute Below Seven Oaks Dikes	523.6R	Chute of Duncansby Towhead	506.5R
Chute at Tarpley Cutoff	542.7R	Chute of Kentucky Bend Bar	519.7R	Chute Below Corregidor	505.4L
Chute at Leland Neck	541.3L	Chute of Island 86 Dikes	518.8R	Chute of Wilson Point Dikes	499.9R

Reach Summary

Table I2. Sum of Reach I area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yds ³)			
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	100%	410	590	910	1,210	7,065,000	21,112,000	
1975	100%	580	690	800	880	14,985,000	27,747,000	
1994	100%	160	240	330	460	3,926,000	9,312,000	
2000	100%	90	150	260	420	1,946,000	6,338,000	

Table I3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach I. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Voor	Come		Area	(Acres)		Volum	ne (yd³)
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at Georgetown Bend	551- 549.6L	1964	100%	0	0	0	0	0	0
Chute at Georgetown Bend	551- 549.6L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Georgetown Bend	551- 549.6L	1989	100%	0	0	0	0	0	0
Chute at Georgetown Bend	551- 549.6L	1994	100%	0	0	30	50	10,000	448,000
Chute at Georgetown Bend	551- 549.6L	2000	100%	10	30	60	100	189,000	1,272,000
Chute of Island 82	549- 539.4R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82	549- 539.4R	1975	100%	80	210	480	890	1,785,000	9,933,000
Chute of Island 82	549- 539.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82	549- 539.4R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82	549- 539.4R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Miller Bend	548.8- 544.6L	1964	100%	260	540	890	1,340	6,190,000	20,964,000
Chute at Miller Bend	548.8- 544.6L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Miller Bend	548.8- 544.6L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Miller Bend	548.8- 544.6L	1994	95%	0	0	30	90	16,000	622,000
Chute at Miller Bend	548.8- 544.6L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82- Miller Bend Dikes	545.4- 544R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82- Miller Bend Dikes	545.4- 544R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 82- Miller Bend Dikes	545.4- 544R	1989	100%	0	0	0	0	0	0
Chute of Island 82- Miller Bend Dikes	545.4- 544R	1994	100%	0	10	20	80	45,000	543,000

Occasion Observat	River	Vaan	0		Area	(Acres)		Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Island 82- Miller Bend Dikes	545.4- 544R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Tarpley Cutoff	542.7- 538.8R	1964	100%	190	360	410	630	6,322,000	13,240,000	
Chute at Tarpley Cutoff	542.7- 538.8R	1975	100%	100	340	520	630	2,947,000	11,113,000	
Chute at Tarpley Cutoff	542.7- 538.8R	1989	100%	140	250	370	490	5,075,000	11,041,000	
Chute at Tarpley Cutoff	542.7- 538.8R	1994	100%	210	380	580	730	6,809,000	16,061,000	
Chute at Tarpley Cutoff	542.7- 538.8R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Leland Neck	541.3- 539.3L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Leland Neck	541.3- 539.3L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Leland Neck	541.3- 539.3L	1989	100%	10	20	40	90	241,000	916,000	
Chute at Leland Neck	541.3- 539.3L	1994	100%	0	0	20	60	11,000	341,000	
Chute at Leland Neck	541.3- 539.3L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute Below Leland Bar Dikes	535.9- 533.8R	1964	100%	110	120	190	250	445,000	2,855,000	
Chute Below Leland Bar Dikes	535.9- 533.8R	1975	100%	230	280	340	370	5,899,000	11,354,000	
Chute Below Leland Bar Dikes	535.9- 533.8R	1989	100%	170	240	320	360	2,994,000	8,006,000	
Chute Below Leland Bar Dikes	535.9- 533.8R	1994	100%	0	0	0	0	0	0	
Chute Below Leland Bar Dikes	535.9- 533.8R	2000	100%	0	0	0	0	0	0	
Chute of Island 84 Dikes	534.1- 532.8L	1964	100%	0	0	0	0	0	0	
Chute of Island 84 Dikes	534.1- 532.8L	1975	100%	0	0	0	0	0	0	
Chute of Island 84 Dikes	534.1- 532.8L	1989	100%	0	0	0	0	0	0	
Chute of Island 84 Dikes	534.1- 532.8L	1994	100%	80	170	310	370	2,350,000	7,077,000	
Chute of Island 84 Dikes	534.1- 532.8L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	

Casandani Ohamad	River	Year	Q		Area	(Acres)	Volume (yd³)		
Secondary Channel	Miles	Icai	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Lakeport Towhead	529- 525.4L	1964	100%	300	480	720	960	6,620,000	18,257,000
Chute of Lakeport Towhead	529- 525.4L	1975	100%	350	410	450	500	9,085,000	16,393,000
Chute of Lakeport Towhead	529- 525.4L	1989	100%	190	340	500	650	4,156,000	12,166,000
Chute of Lakeport Towhead	529- 525.4L	1994	100%	160	240	330	460	3,926,000	9,312,000
Chute of Lakeport Towhead	529- 525.4L	2000	100%	90	150	260	420	1,946,000	6,338,000
Chute Below Seven Oaks Dikes	523.6- 520.6R	1964	100%	20	60	100	190	357,000	2,190,000
Chute Below Seven Oaks Dikes	523.6- 520.6R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Below Seven Oaks Dikes	523.6- 520.6R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Below Seven Oaks Dikes	523.6- 520.6R	1994	100%	30	100	200	290	708,000	3,877,000
Chute Below Seven Oaks Dikes	523.6- 520.6R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Kentucky Bend Bar	519.7- 515R	1964	100%	970	1,59 0	2,180	2,570	37,373,000	71,548,000
Chute of Kentucky Bend Bar	519.7- 515R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Kentucky Bend Bar	519.7- 515R	1989	100%	80	190	440	690	1,502,000	8,463,000
Chute of Kentucky Bend Bar	519.7- 515R	1994	100%	60	140	300	590	1,610,000	6,886,000
Chute of Kentucky Bend Bar	519.7- 515R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 86 Dikes	518.8- 516.7R	1964	100%	0	0	0	0	0	0
Chute of Island 86 Dikes	518.8- 516.7R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Island 86 Dikes	518.8- 516.7R	1989	100%	0	0	0	0	0	0
Chute of Island 86 Dikes	518.8- 516.7R	1994	100%	40	110	200	280	1,039,000	4,236,000
Chute of Island 86 Dikes	518.8- 516.7R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Kentucky Bend	518.3- 517.1L	1964	100%	0	0	0	0	0	0

Casandan, Ohannal	River	Year	O mare		Area	(Acres)	Volume (yd3)		
Secondary Channel	Miles	Icai	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at Kentucky Bend	518.3- 517.1L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Kentucky Bend	518.3- 517.1L	1989	100%	200	210	240	260	6,487,000	10,282,000
Chute at Kentucky Bend	518.3- 517.1L	1994	100%	0	0	0	0	0	0
Chute at Kentucky Bend	518.3- 517.1L	2000	100%	0	0	0	0	0	0
Chute of Leota Dikes	514.3- 511.2L	1964	100%	0	0	0	0	0	0
Chute of Leota Dikes	514.3- 511.2L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Leota Dikes	514.3- 511.2L	1989	100%	0	0	50	150	7,000	944,000
Chute of Leota Dikes	514.3- 511.2L	1994	100%	0	0	0	0	0	0
Chute of Leota Dikes	514.3- 511.2L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Cracraft Lower Dikes	510.3- 506.2R	1964	100%	10	50	90	180	223,000	1,795,000
Chute of Cracraft Lower Dikes	510.3- 506.2R	1975	80%	110	170	260	330	2,881,000	6,994,000
Chute of Cracraft Lower Dikes	510.3- 506.2R	1989	100%	120	240	350	510	2,384,000	8,233,000
Chute of Cracraft Lower Dikes	510.3- 506.2R	1994	100%	120	210	310	440	2,051,000	7,145,000
Chute of Cracraft Lower Dikes	510.3- 506.2R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Duncansby Towhead	506.5- 503.6R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Duncansby Towhead	506.5- 503.6R	1975	100%	20	80	190	380	438,000	3,911,000
Chute of Duncansby Towhead	506.5- 503.6R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Duncansby Towhead	506.5- 503.6R	1994	100%	0	0	0	0	0	0
Chute of Duncansby Towhead	506.5- 503.6R	2000	100%	0	0	0	0	0	0
Chute Below Corregidor	505.4- 502.6L	1964	100%	0	0	80	190	1,000	1,286,000
Chute Below Corregidor	505.4- 502.6L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Sacandan, Channal	River	Year	Cura		Area	(Acres)		Volume (yd³)	
Secondary Channel	Miles	Teal	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute Below Corregidor	505.4- 502.6L	1989	100%	0	0	0	0	0	0
Chute Below Corregidor	505.4- 502.6L	1994	100%	0	0	0	0	0	0
Chute Below Corregidor	505.4- 502.6L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Wilson Point Dikes	499.9- 495.1R	1964	100%	0	0	0	0	0	0
Chute of Wilson Point Dikes	499.9- 495.1R	1975	100%	30	60	120	230	422,000	2,459,000
Chute of Wilson Point Dikes	499.9- 495.1R	1989	100%	10	50	130	320	214,000	2,624,000
Chute of Wilson Point Dikes	499.9- 495.1R	1994	100%	50	70	120	270	1,139,000	3,379,000
Chute of Wilson Point Dikes	499.9- 495.1R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

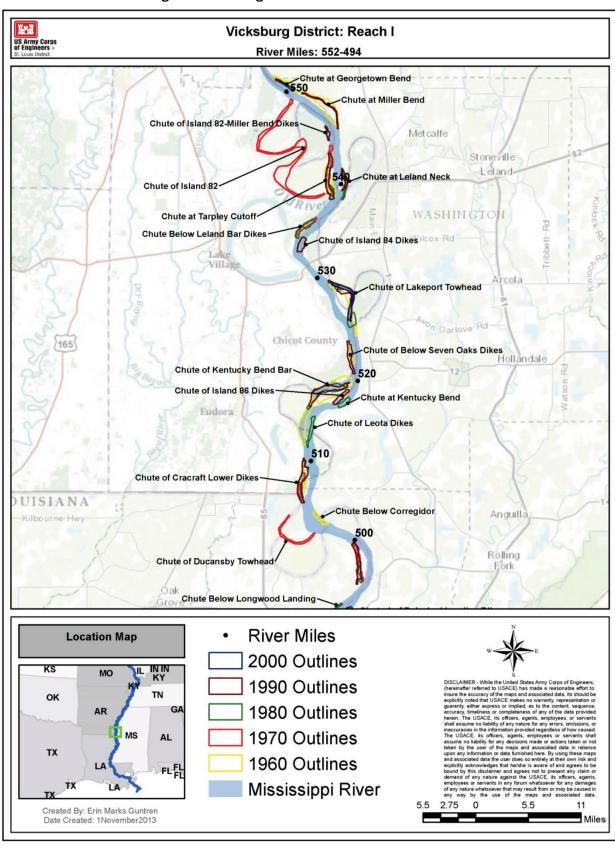
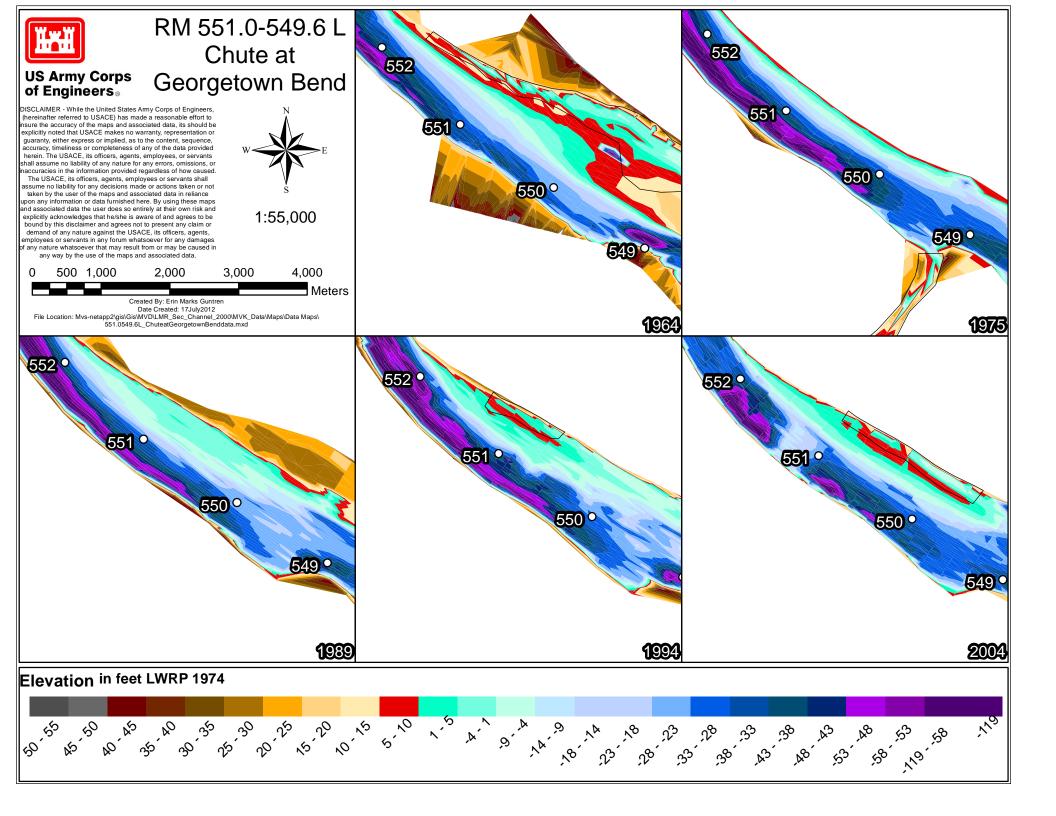
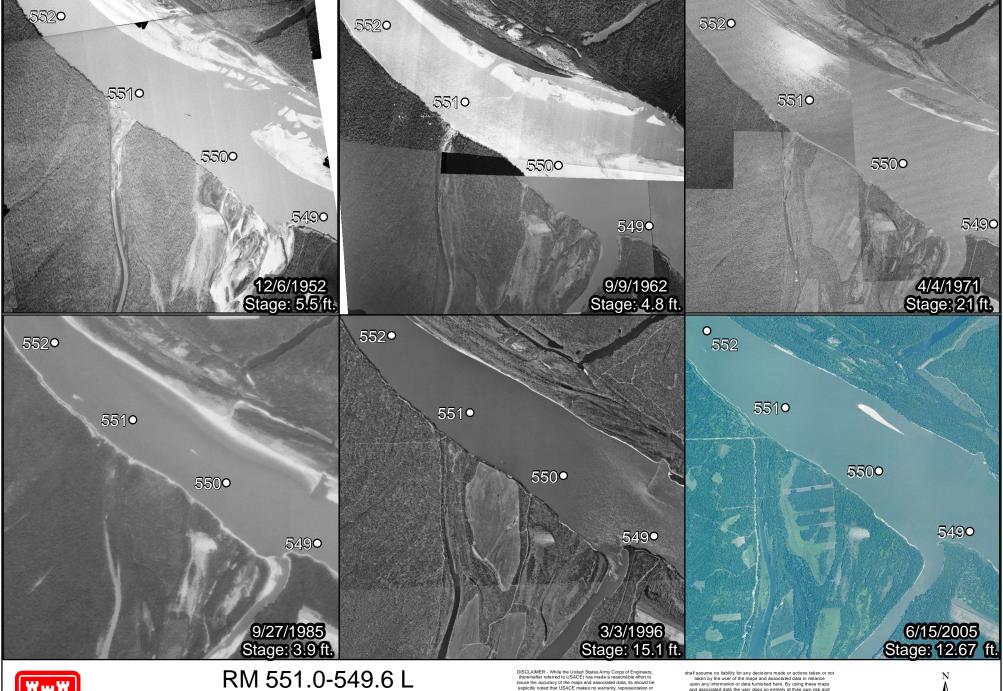


Figure I1. Vicksburg District Reach I river miles 552-494.







RM 551.0-549.6 L Chute At Georgetown Bend 1:55,000 Distance to gage: 3 river miles

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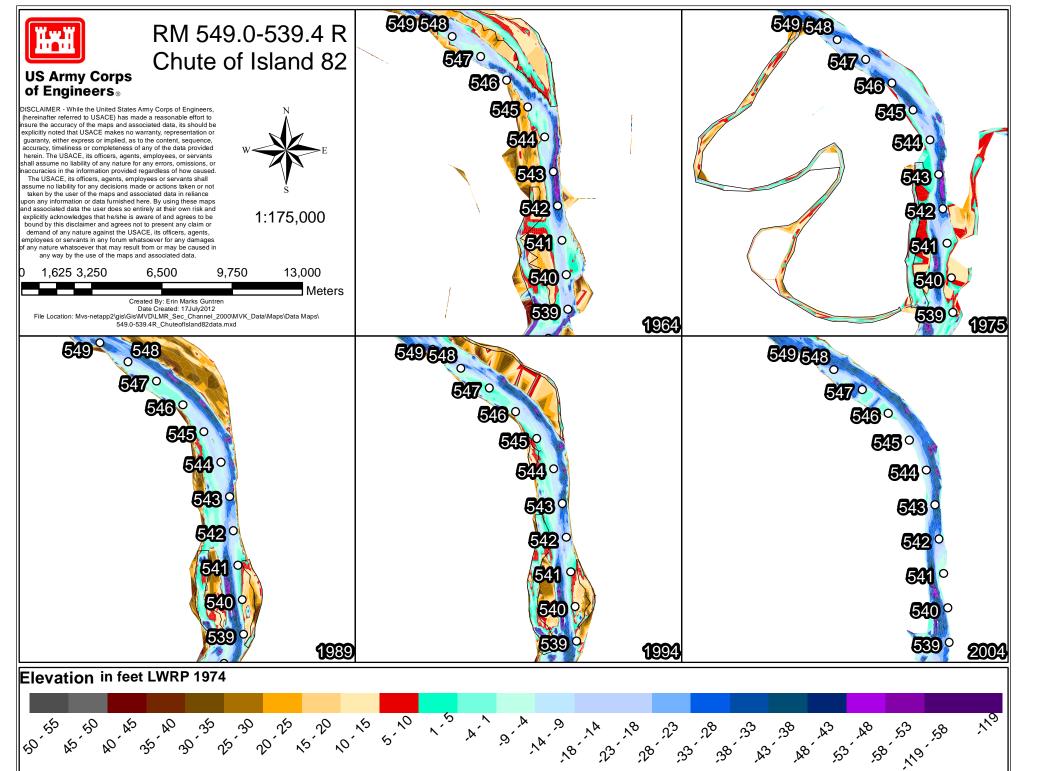
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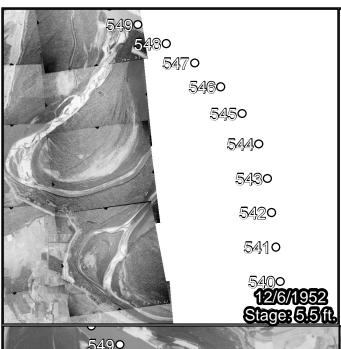
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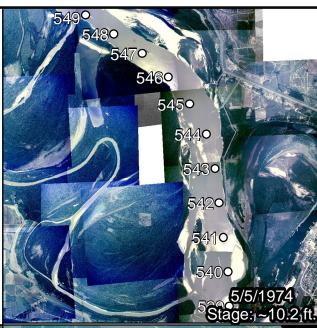


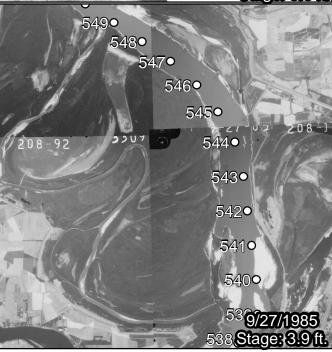
600 1,200 2,400

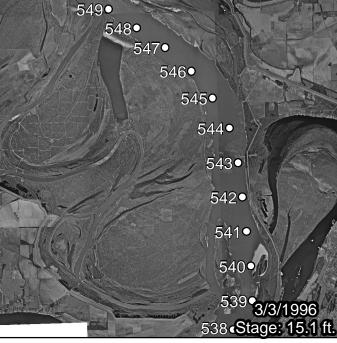
4,800 Meters















RM 549.0-539.4 R Chute of Island 82 1:175,000 Distance to gage: 5 river miles DISCLAIMER - While the United States Army Corps of Engineers, (hereinather referred to USACE) has made a reasonable effort to usure the accuracy of the maps and associated data, it is should be made to the state of the state o

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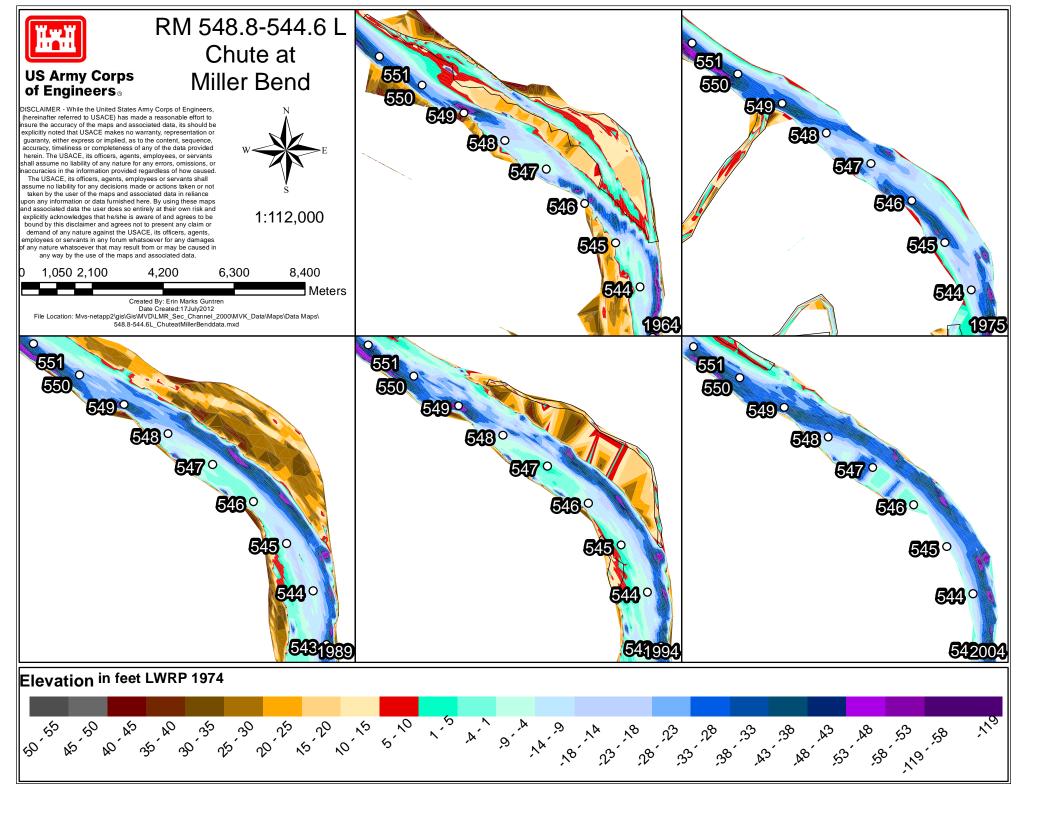
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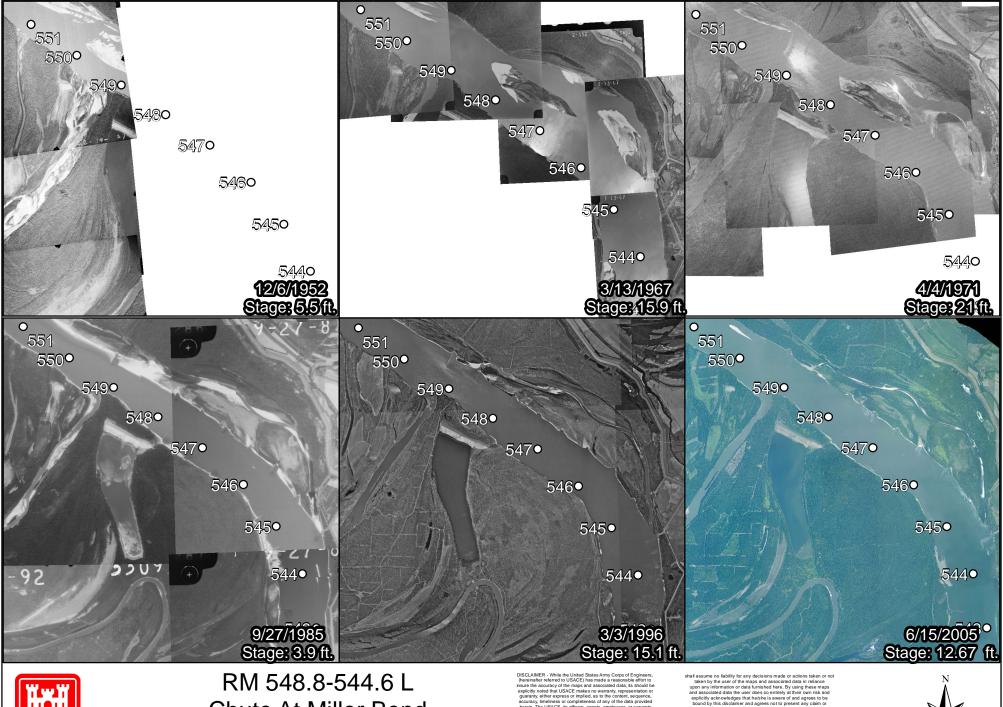
0 1,950 3,900

11,700

7,800

15,600







Chute At Miller Bend

1:112,000 Distance to gage: 6 river miles

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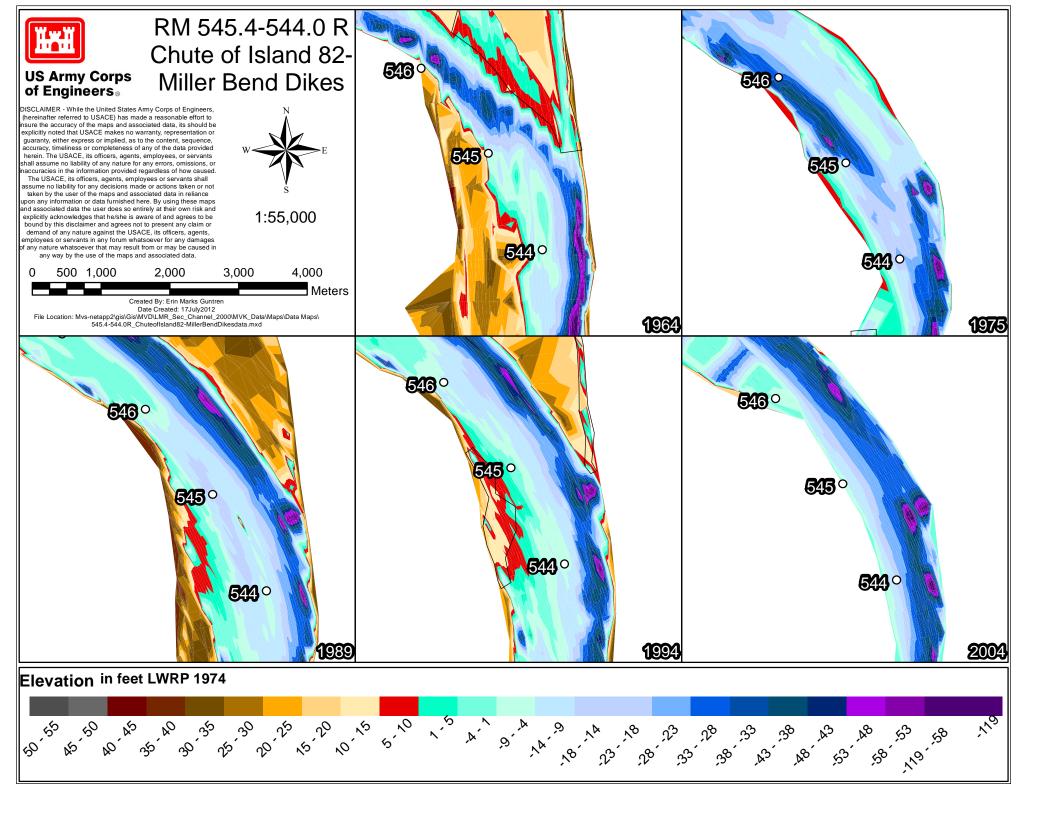


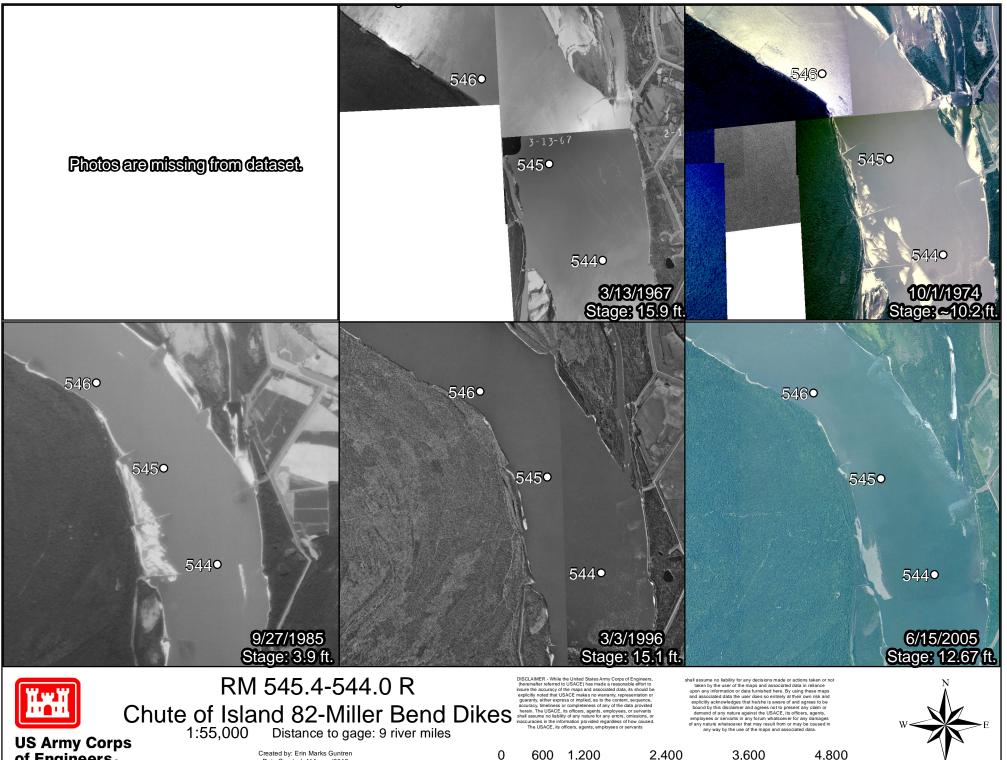
1,250 2,500

5,000

7,500

10,000



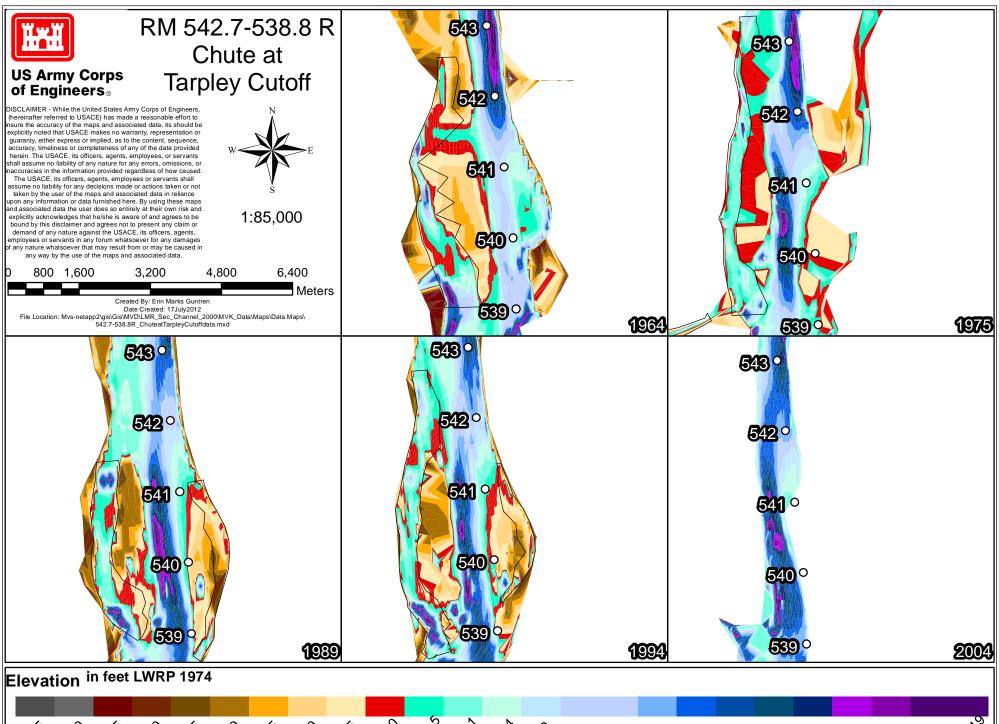


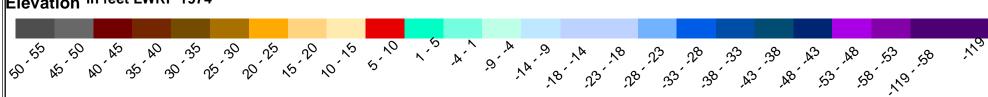
US Army Corps of Engineers.

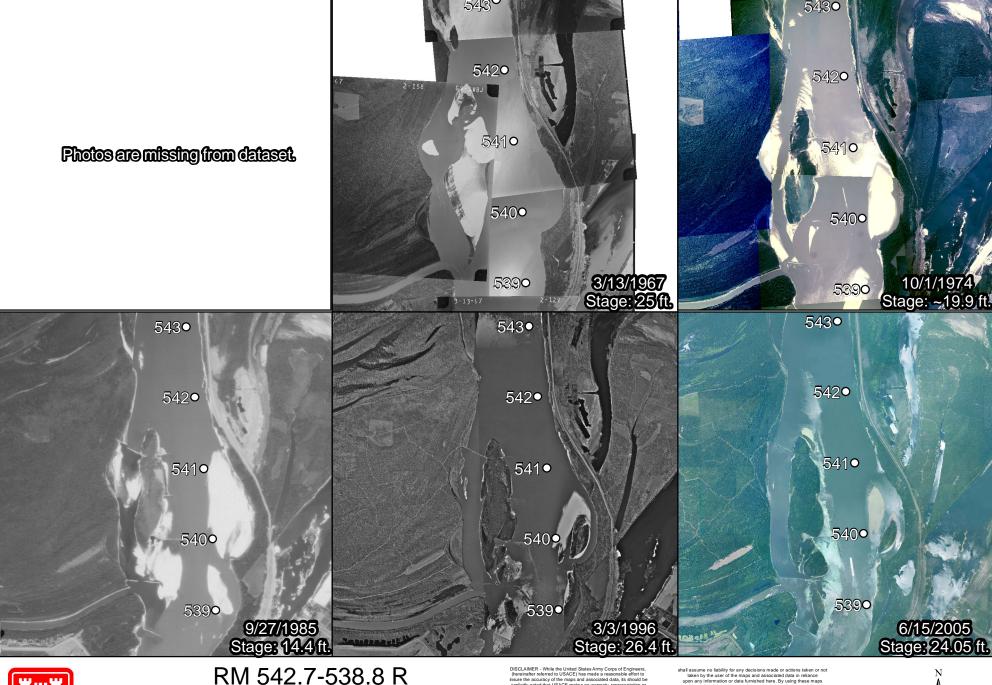


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545.4-544.0R ChuteofIsland82-MillerBendDikesphotos.mxd 1,200

2,400 3,600 4,800









RM 542.7-538.8 R
Chute at Tarpley Cutoff
1:85,000 Distance to gage: 11 river miles

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0 900 1,800

5,400

3,600

7,200

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RM 541.3-539.3 L Chute at Leland Neck

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1:55,000

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2,000

3,000

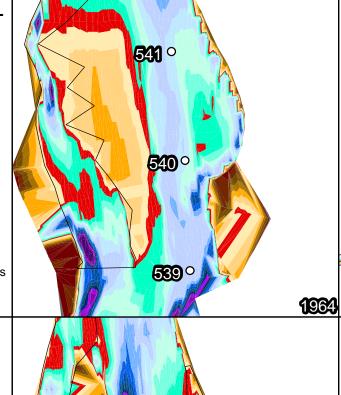
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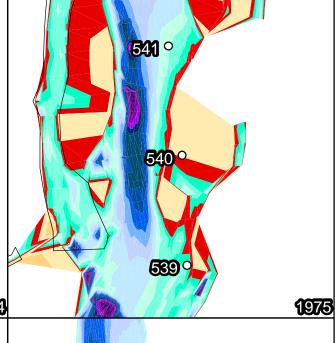
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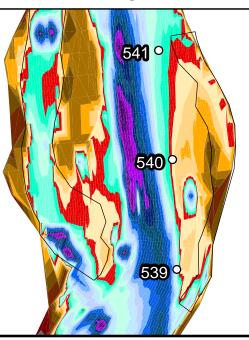
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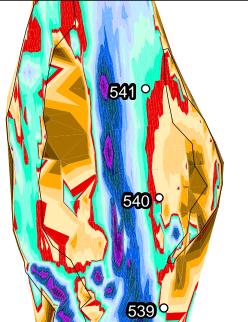
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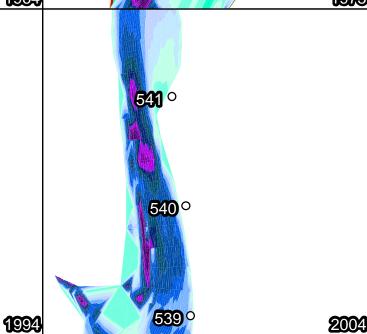
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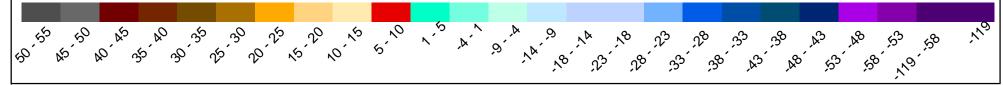


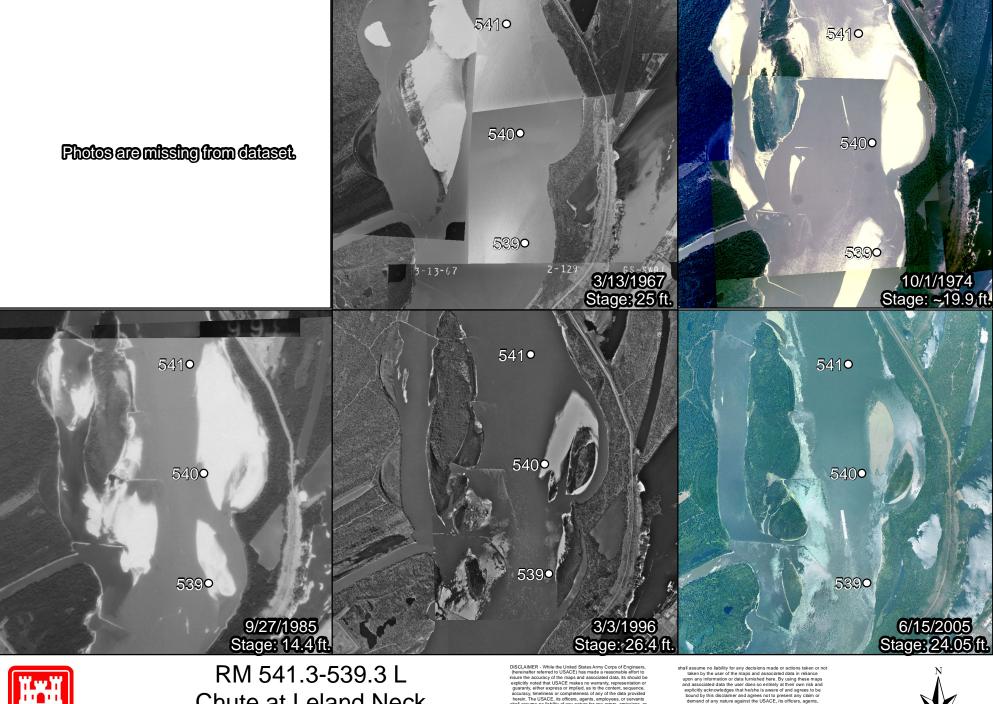






Elevation in feet LWRP 1974



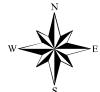




Chute at Leland Neck 1:55,000 Distance to gage: 10 river miles

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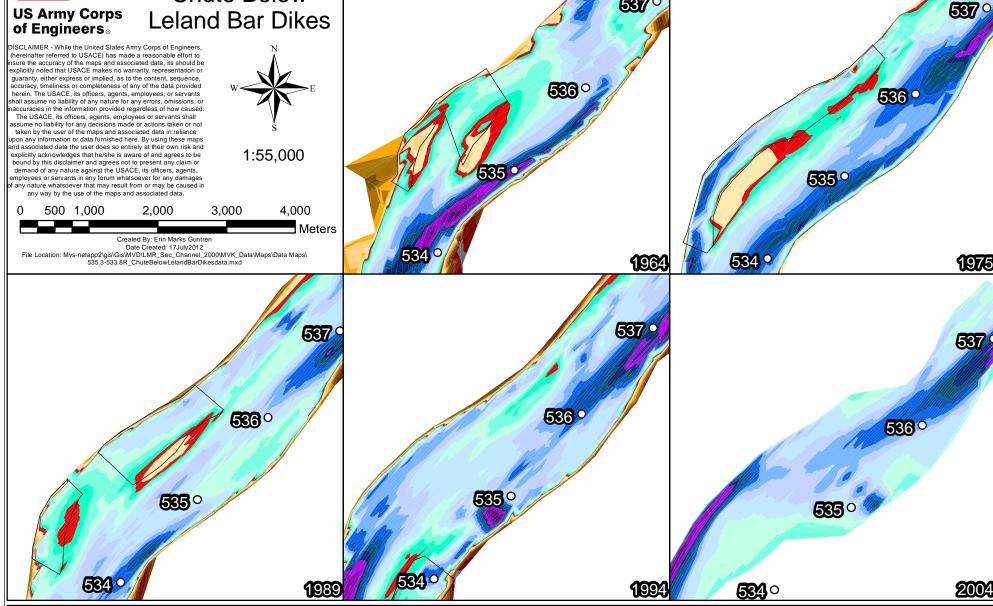
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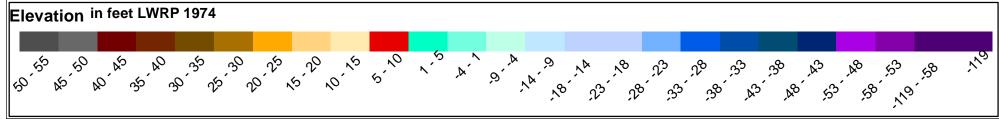
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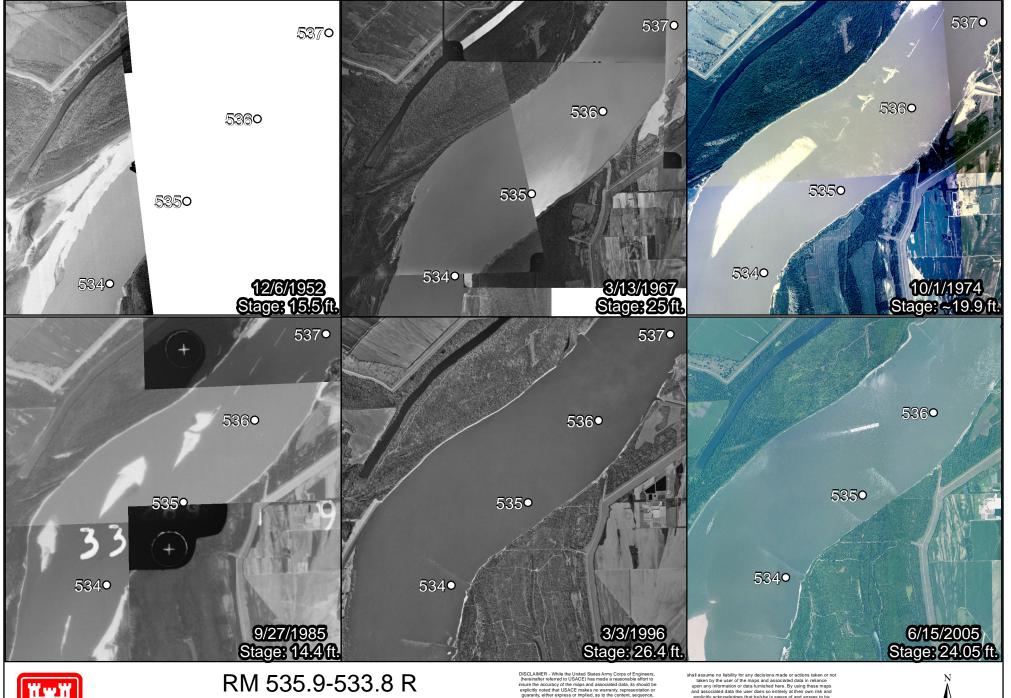
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RM 535.9-533.8 R **Chute Below** Leland Bar Dikes



537°







Chute Below Leland Bar Dikes 1:55,000 Distance to gage: 4 river miles

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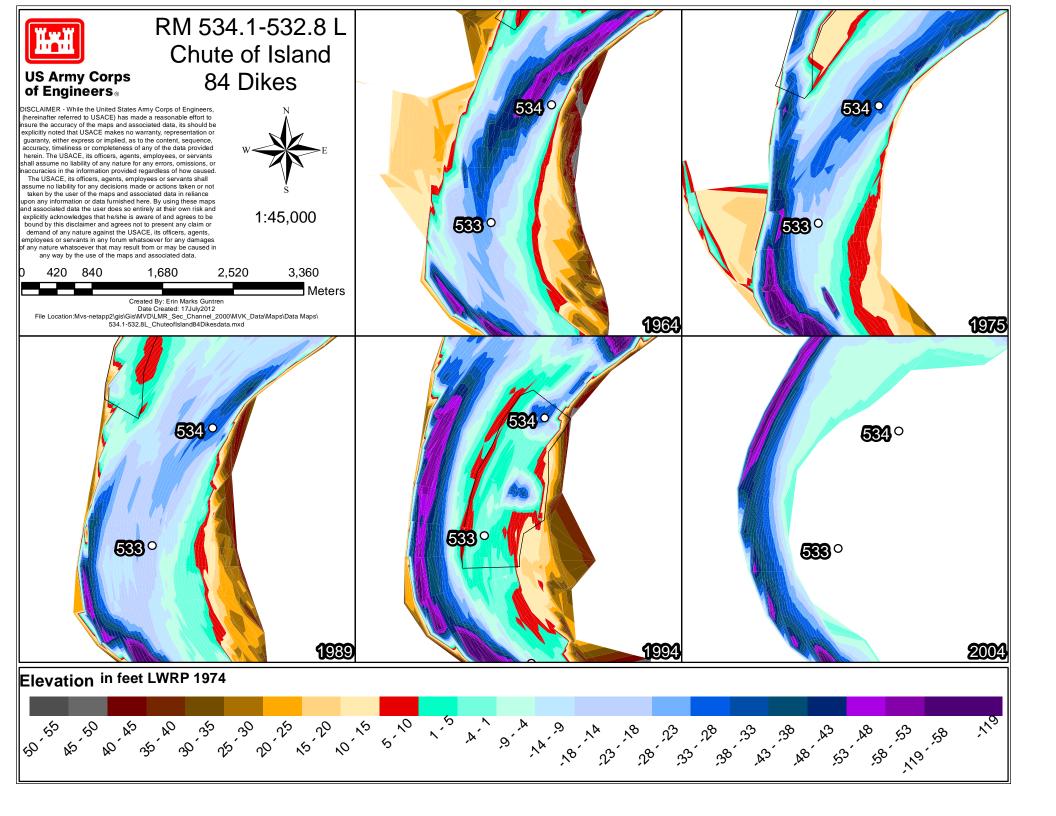
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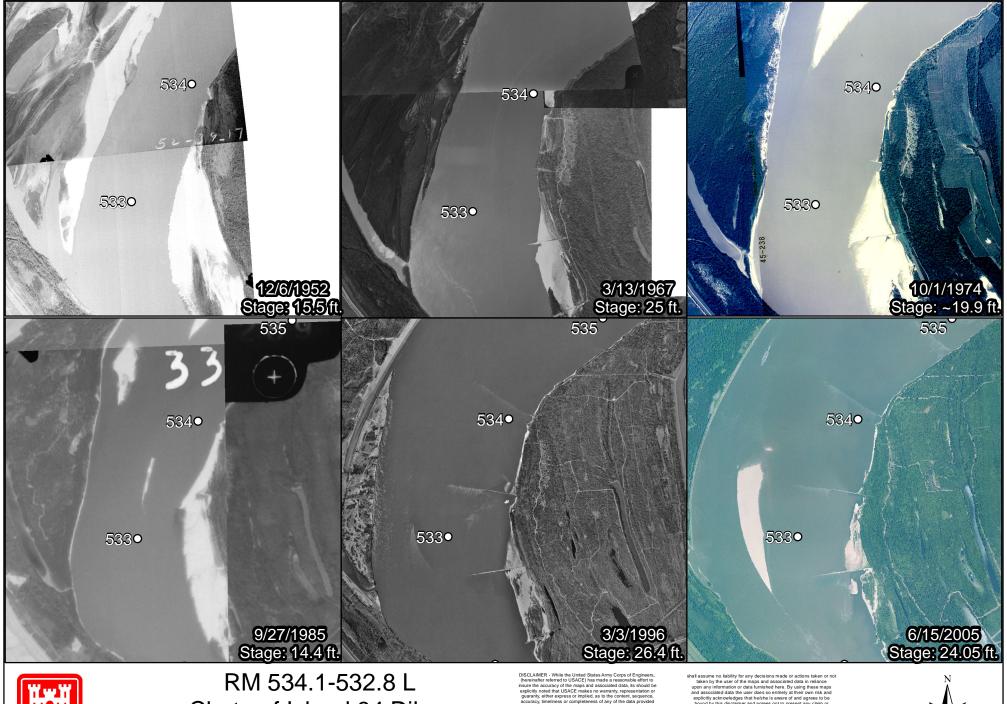
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2,400 1,200

4,800 3,600







Chute of Island 84 Dikes 1:45,000 Distance to gage: 3 river miles

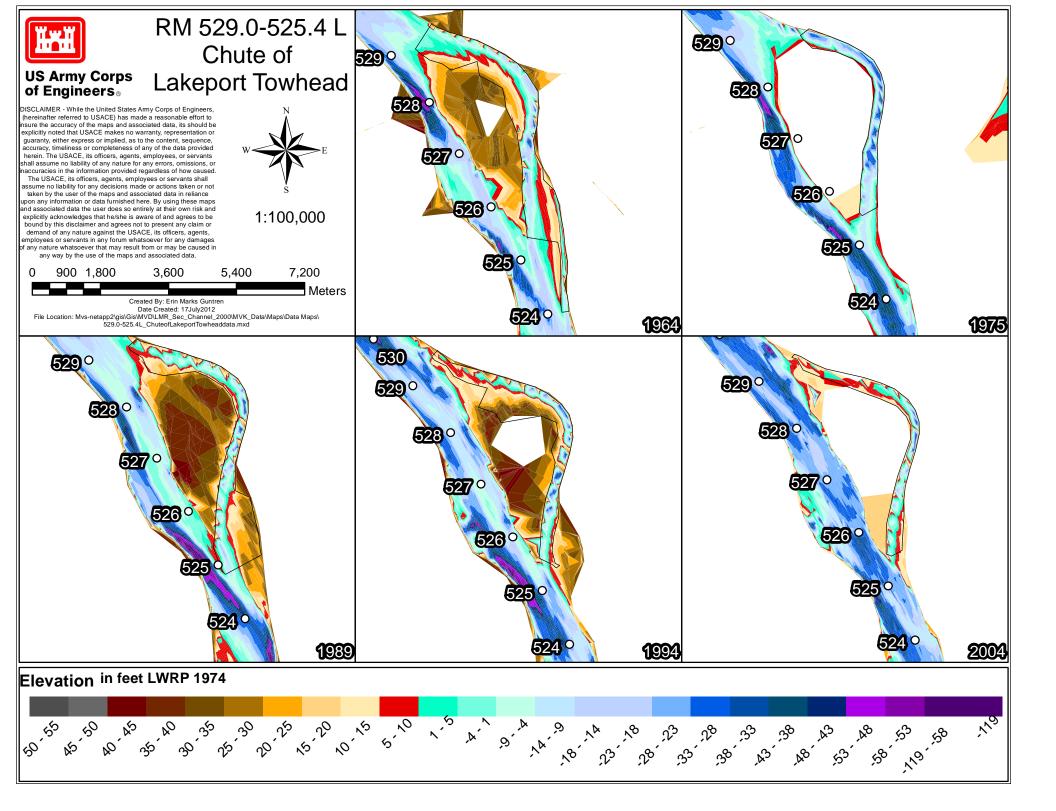
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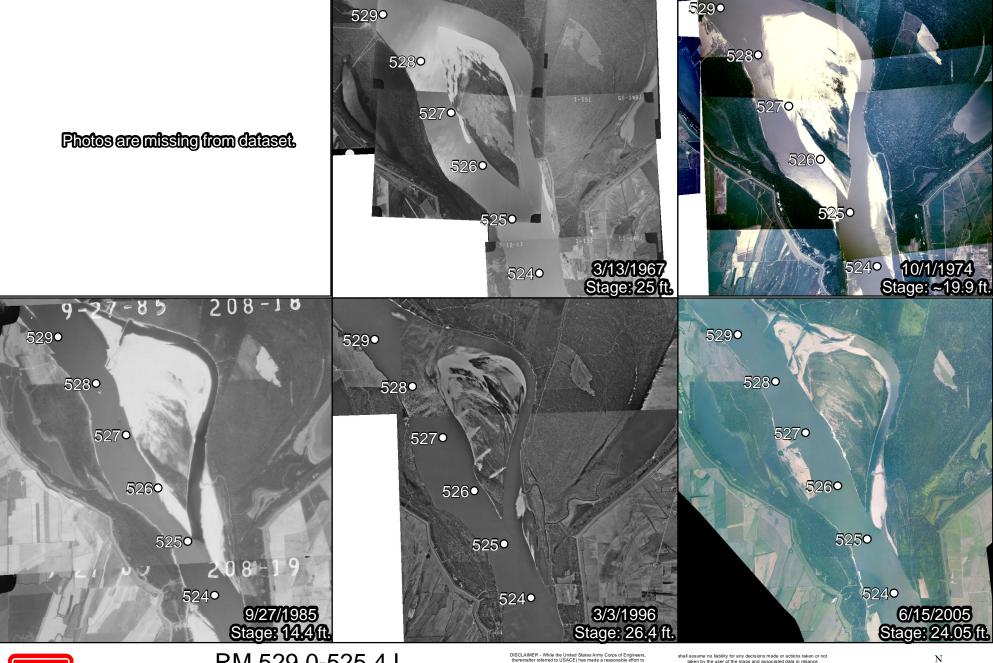
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Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 534.1-532.8L_ChuteofIsland84Dikesphotos.mxd 1,000 2,000 3,000

4,000







RM 529.0-525.4 L Chute of Lakeport Towhead 1:100,000 Distance to gage: 2 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 529.0-525.4L_ChuteofLakeportTowheadphotos.mxd

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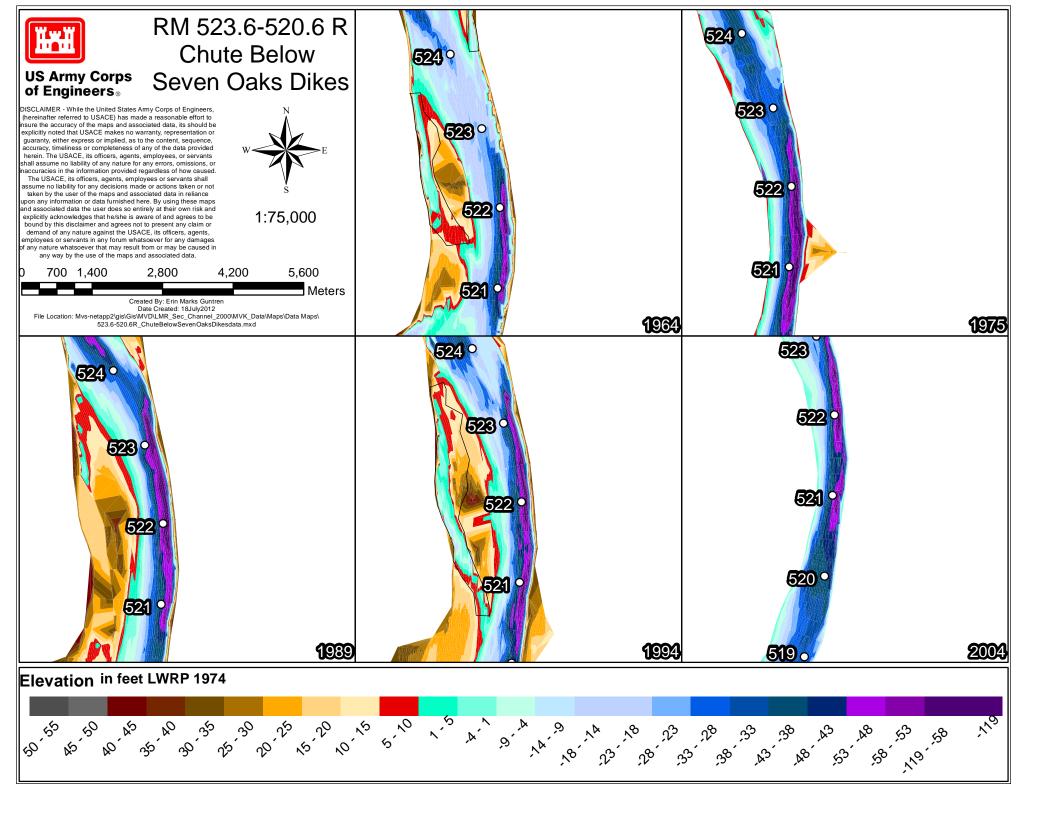


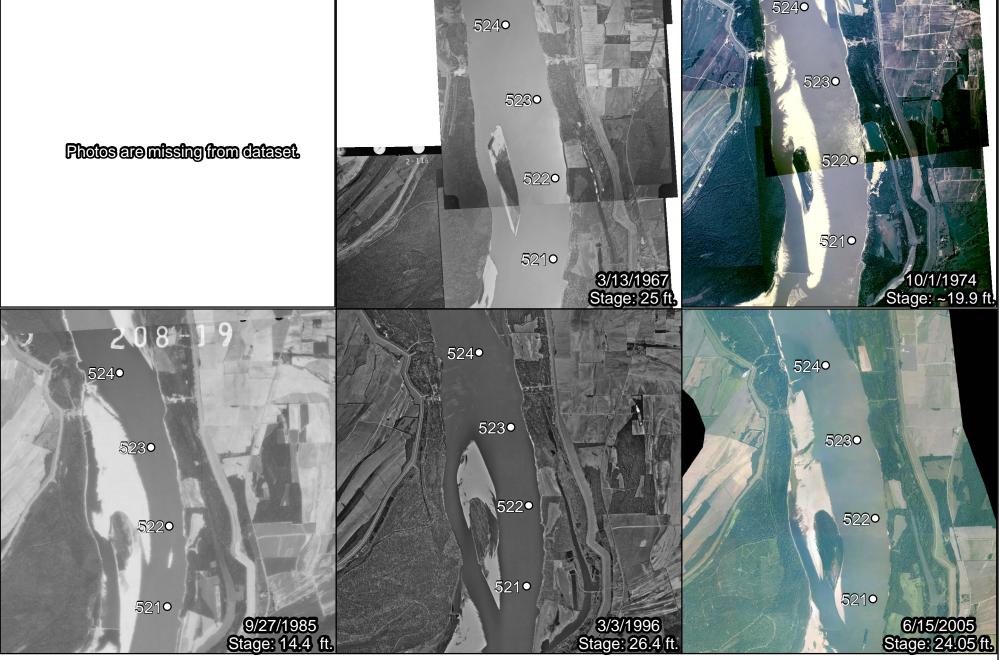
1,100 2,200

4,400

6,600

8,800







RM 523.6-520.6 R Chute Below Seven Oaks Dikes 1:75,000 Distance to gage: 8 river miles

Distance to gage: 8 river miles

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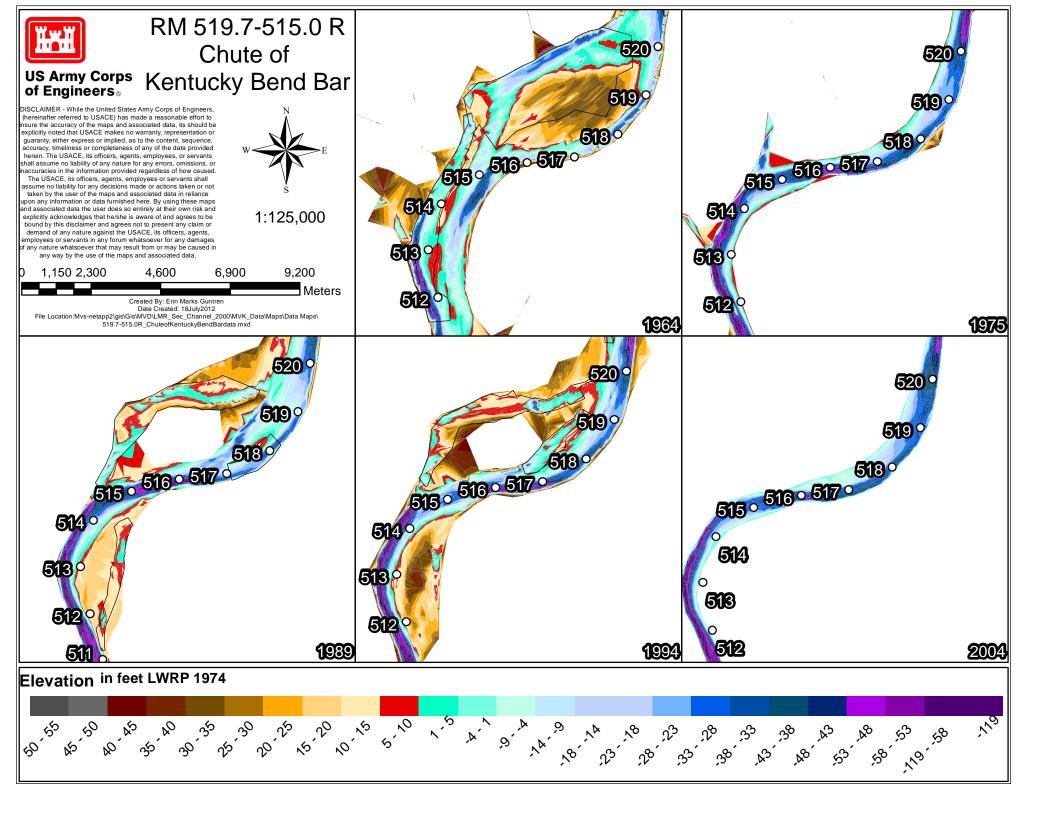
3,200

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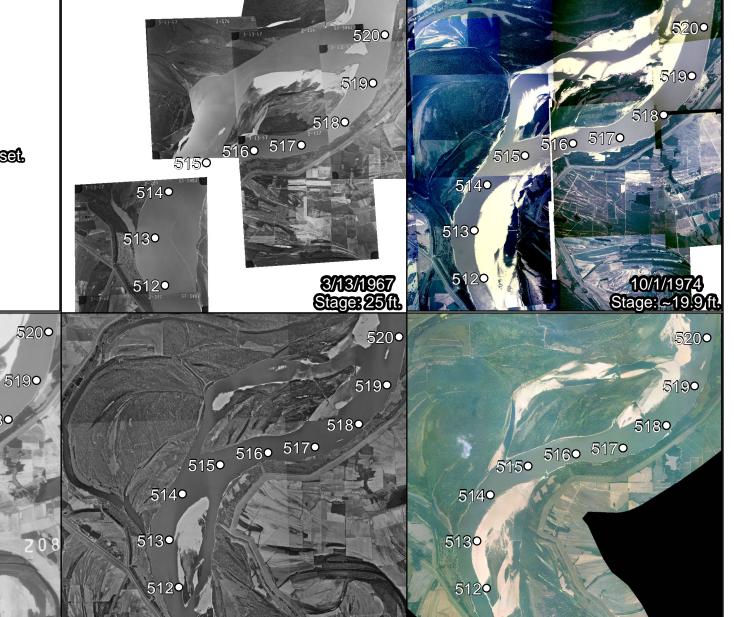
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6,400 4,800



Photos are missing from dataset.

515° 516° 517°





5140

5130

RM 519.7-515.0 R Chute of Kentucky Bend Bar 1:125,000 Distance to gage: 12 river miles

9/27/1985

Stage: 14.4ft.

5180

Created by: Erin Marks Guntrer

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9/22/2005

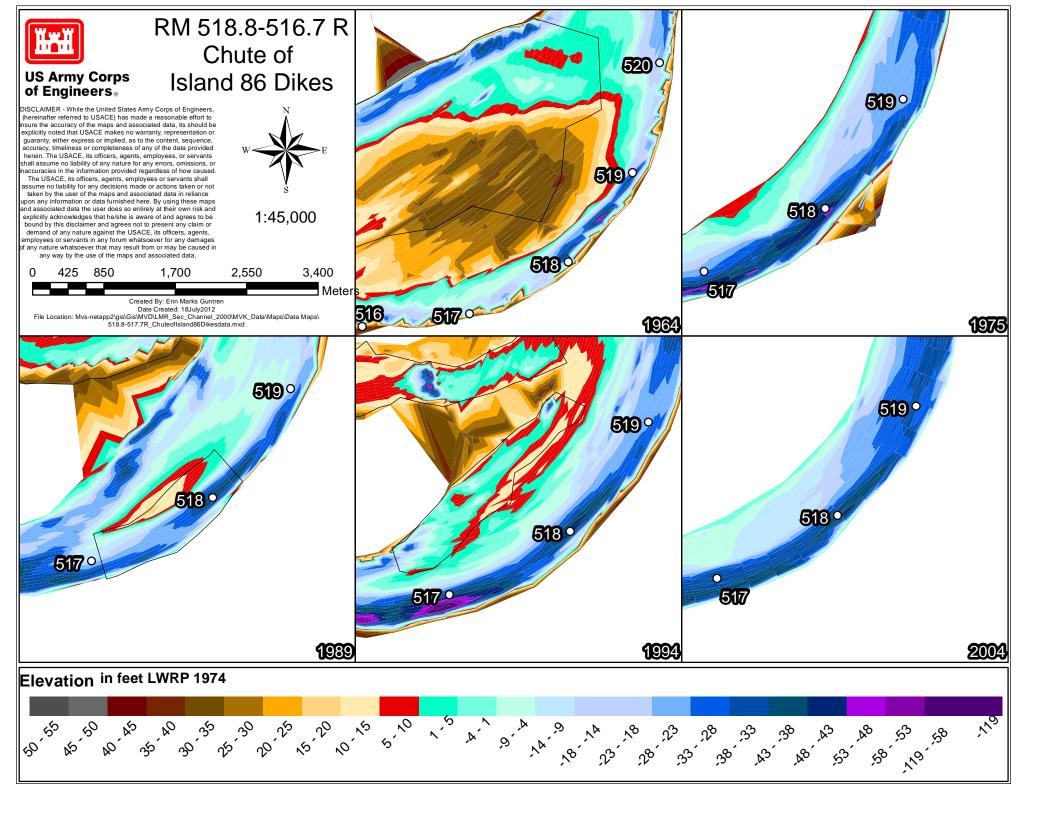
Stage: 11.71 ft.

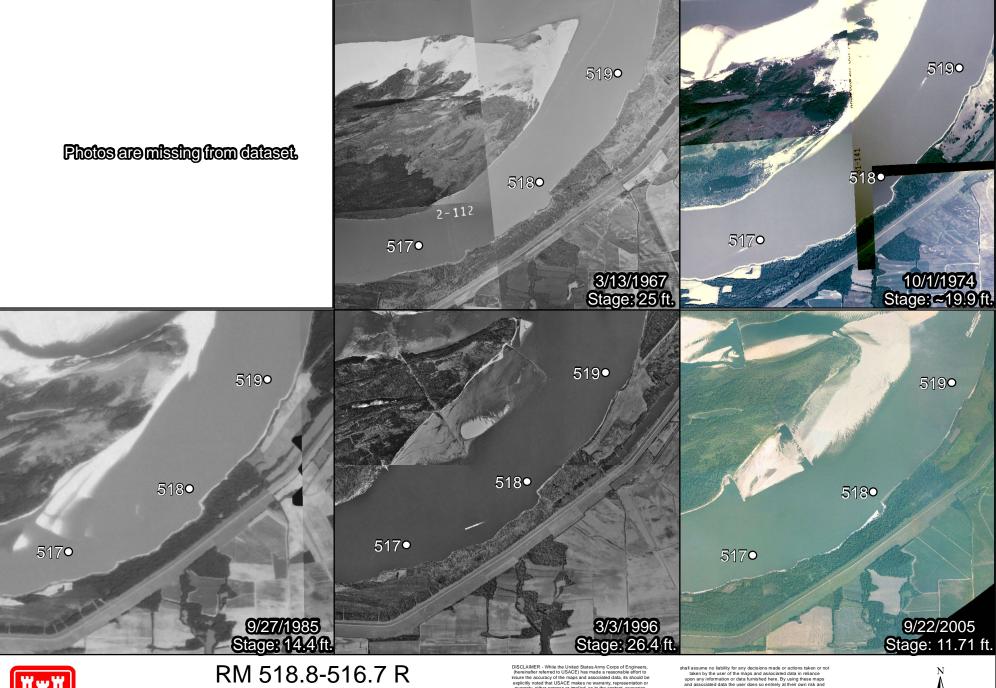
1,375 2,750

8,250

5,500

11,000







RM 518.8-516.7 R Chute of Island 86 Dikes 1:45,000 Distance to gage: 13 river miles DISCLAIMER - While the United States Army Corps of Engineers, phereinather reterred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data; its should be positionally associated to the state of the content, sequence, quaranty, either express or implied, as to the content, sequence, accuracy, timelesses or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume on ballity of any nature for any errors, or inaccuracies in the information provided inspardess of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and explicitly acknowledges that herba is aware of and agrees to be bound by this declaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages and any any active the their tenders of the control of th



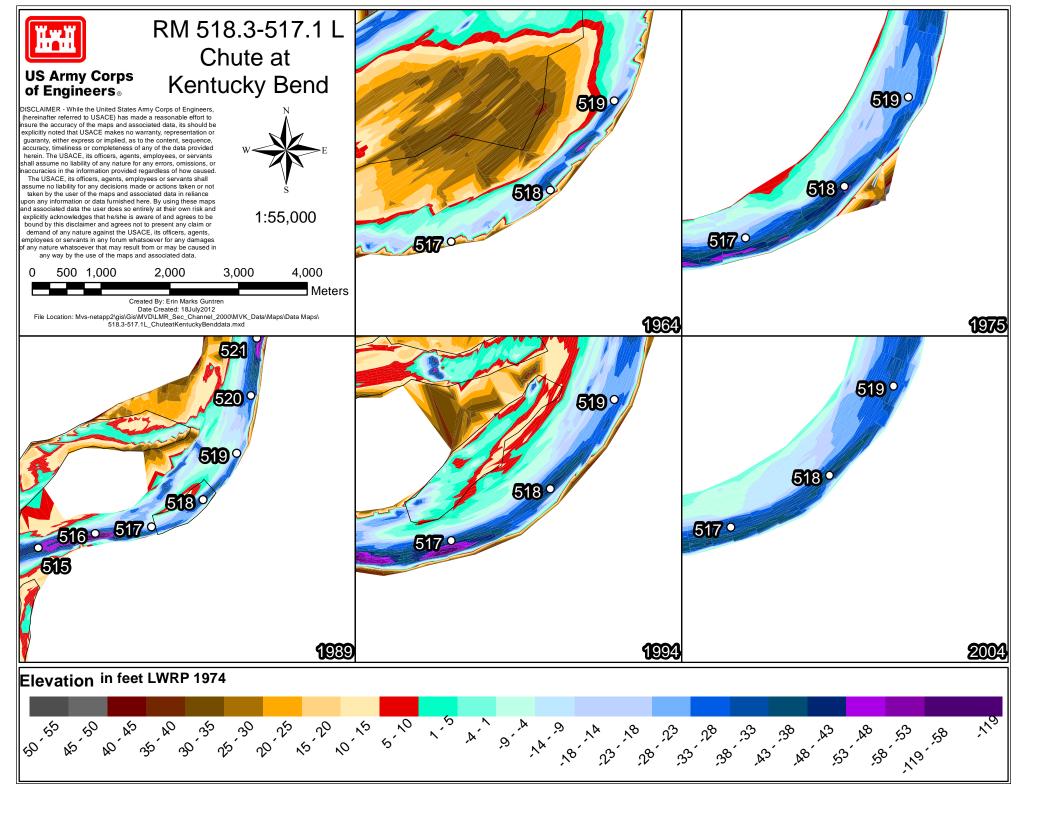
Created by: Erin Marks Guntren
Date Created: 11August2012
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518.8-517.7R_Chuteoflsland86Dikesphotos.mxd

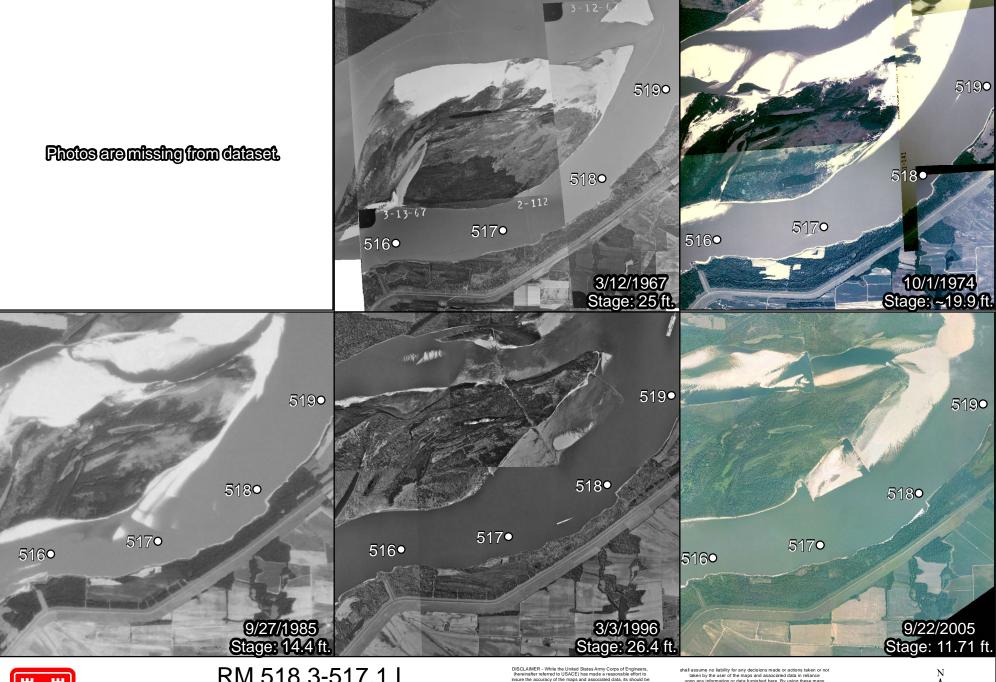
0 500 1,000

3,000

2,000

4,000







RM 518.3-517.1 L

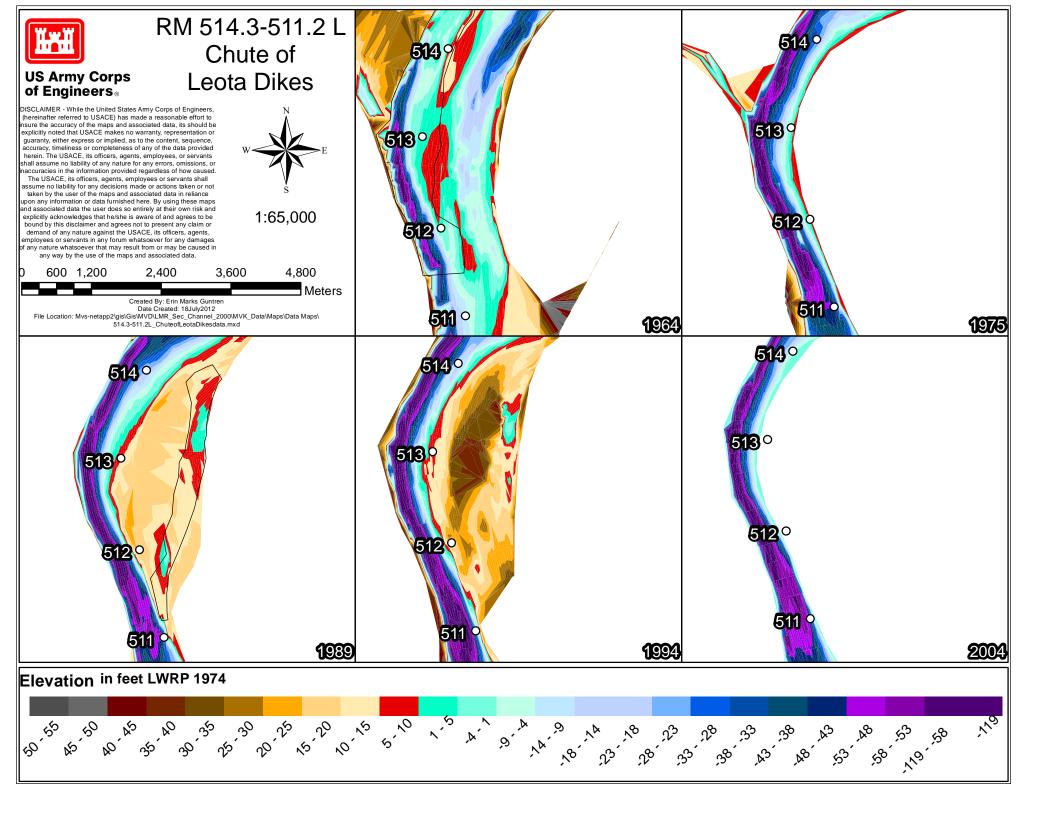
Chute at Kentucky Bend 1:55,000 Distance to gage: 13 river miles

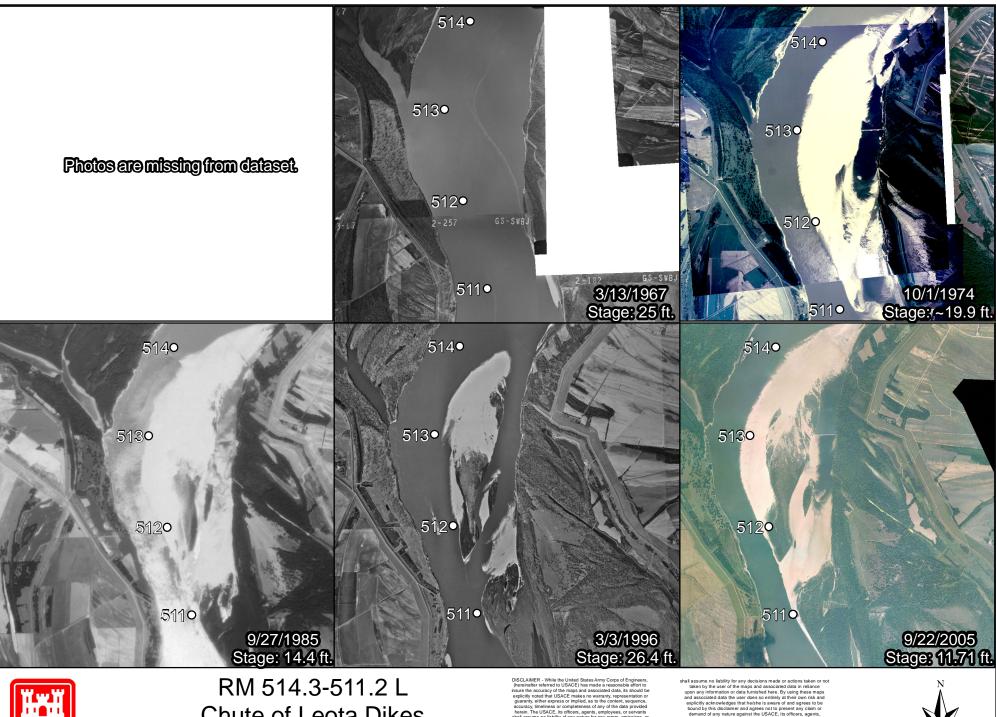
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2,400 4,800 1,200 3,600







Chute of Leota Dikes
1:65,000 Distance to gage: 17 river miles

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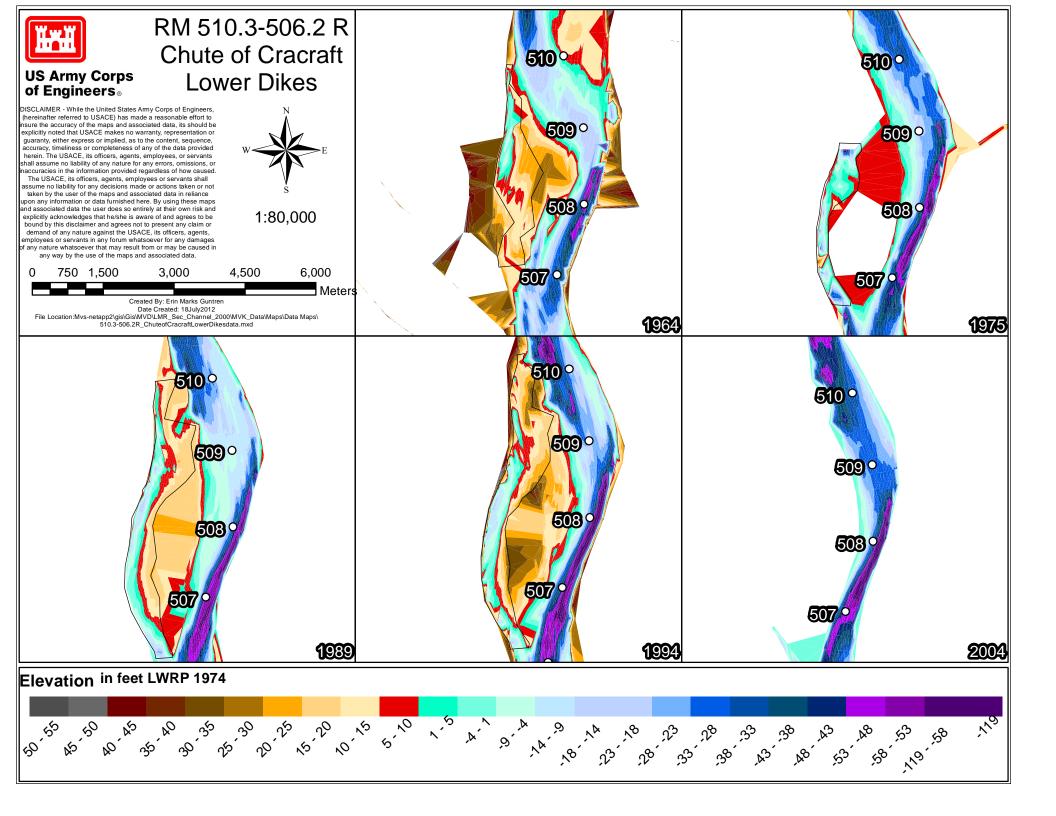
4,200

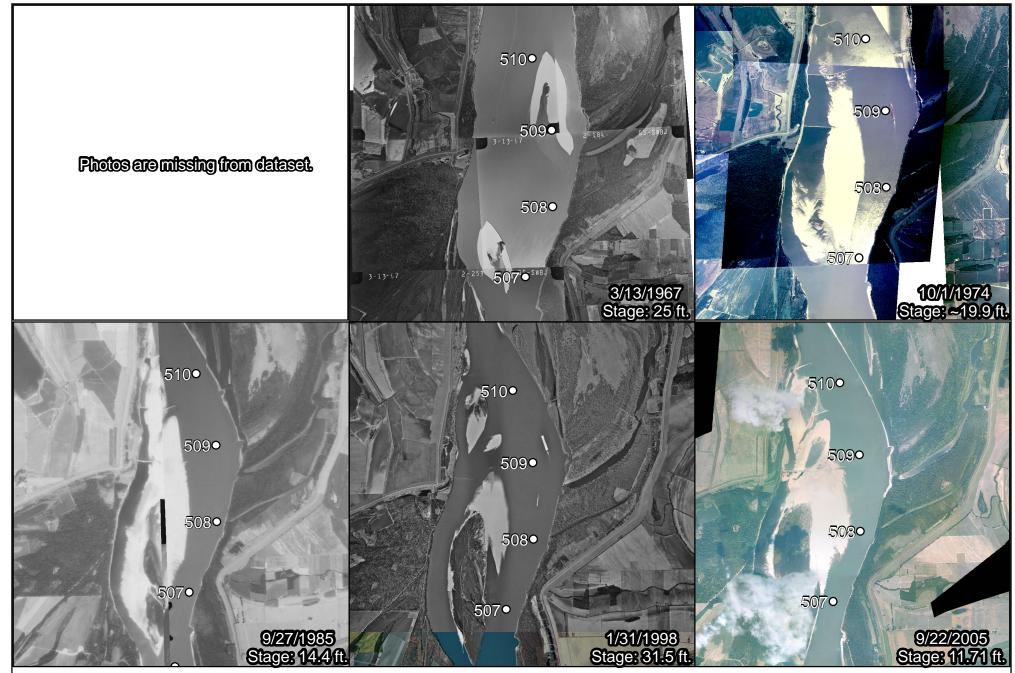


700 1,400

2,800

5,600







RM 510.3-506.2 R Chute of Cracraft Lower Dikes 1:80,000 Distance to gage: 20 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 510.3-506.2R_ChuteofCracraftLowerDikesphotos.mxd

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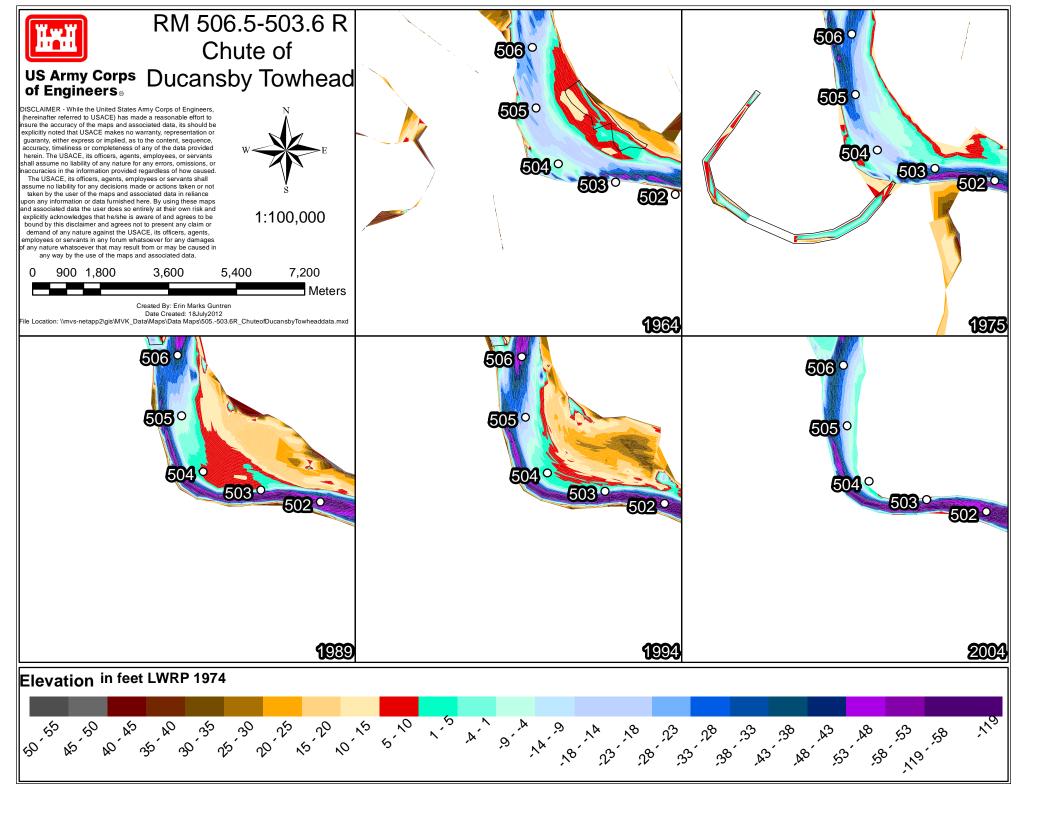
5,250

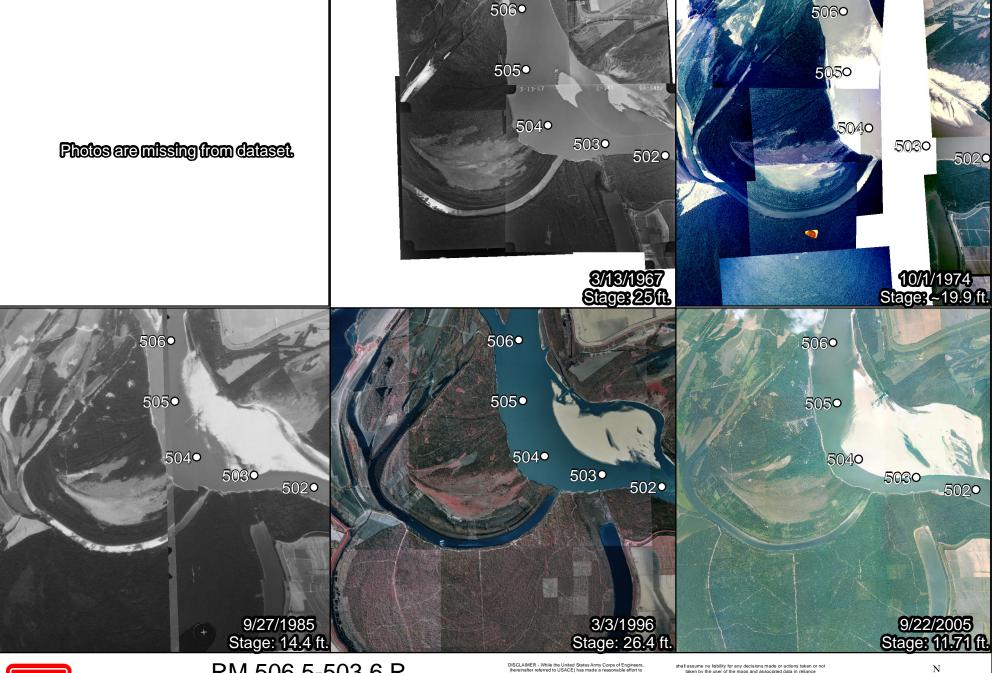


1,750

3,500

7,000







RM 506.5-503.6 R Chute of Ducansby Towhead 1:100,000 Distance to gage: 26 river miles

Created by: Erin Marks Guntren
Date Created: 11August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
506.5-503.6R_ChutedfDucansbyTowheadphotos.mxd

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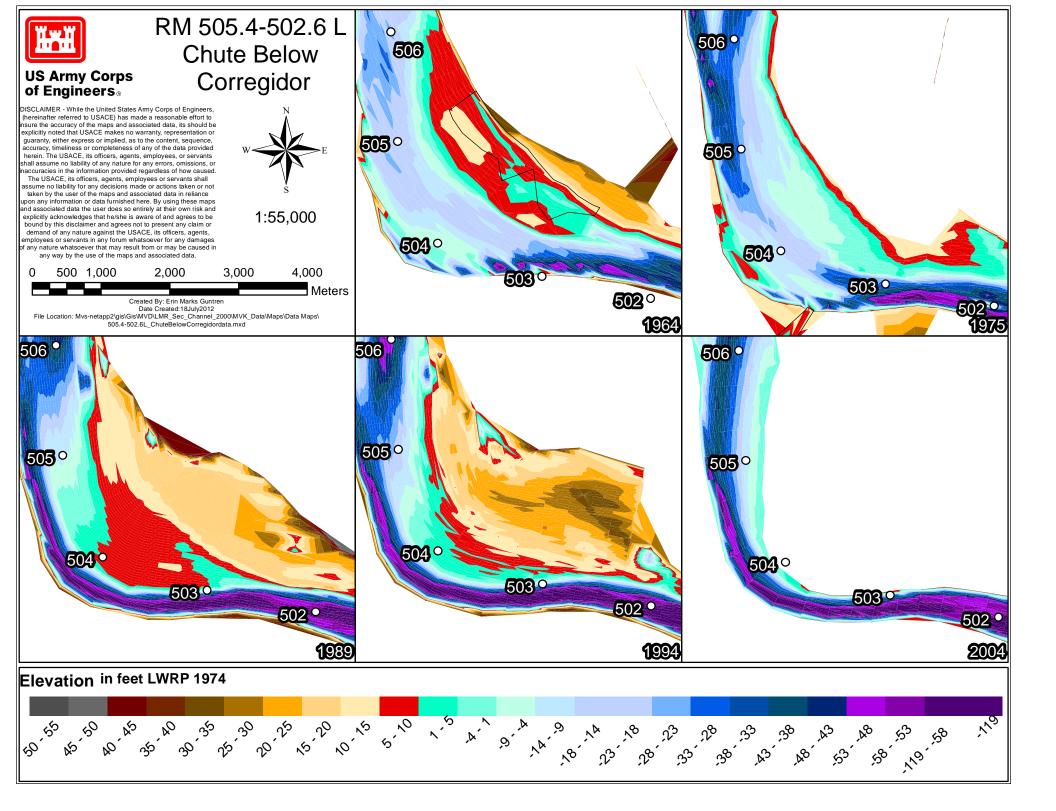


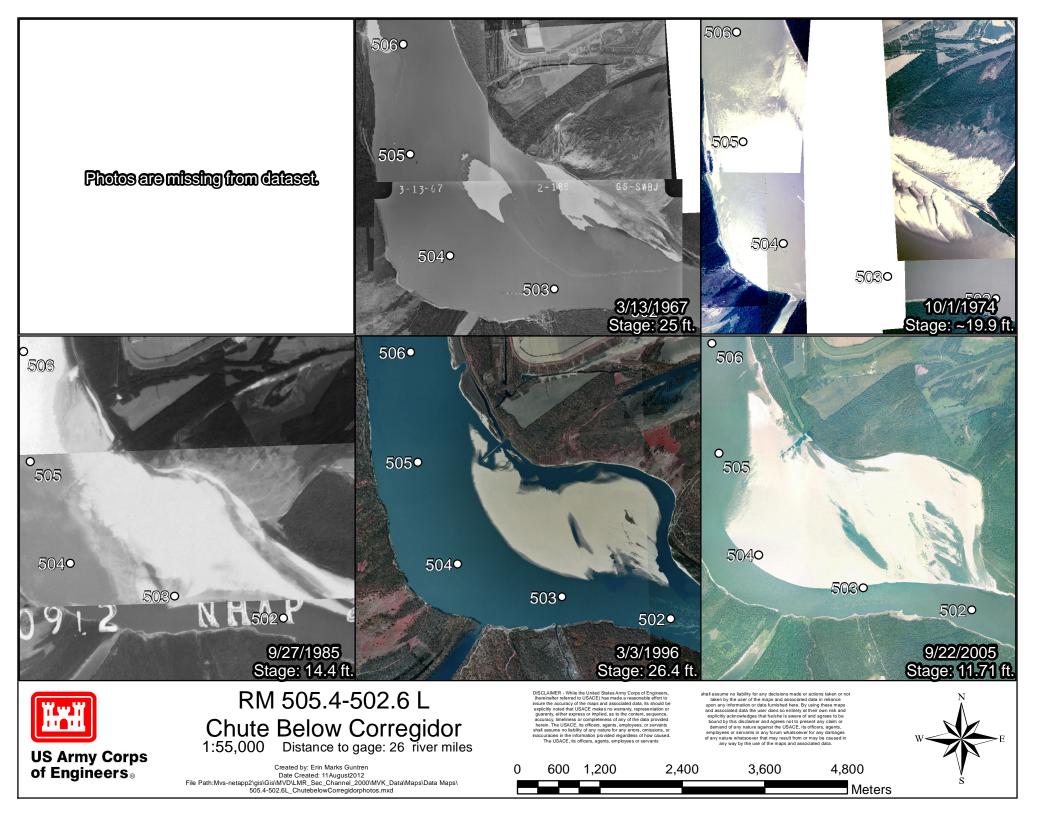
1,100 2,200

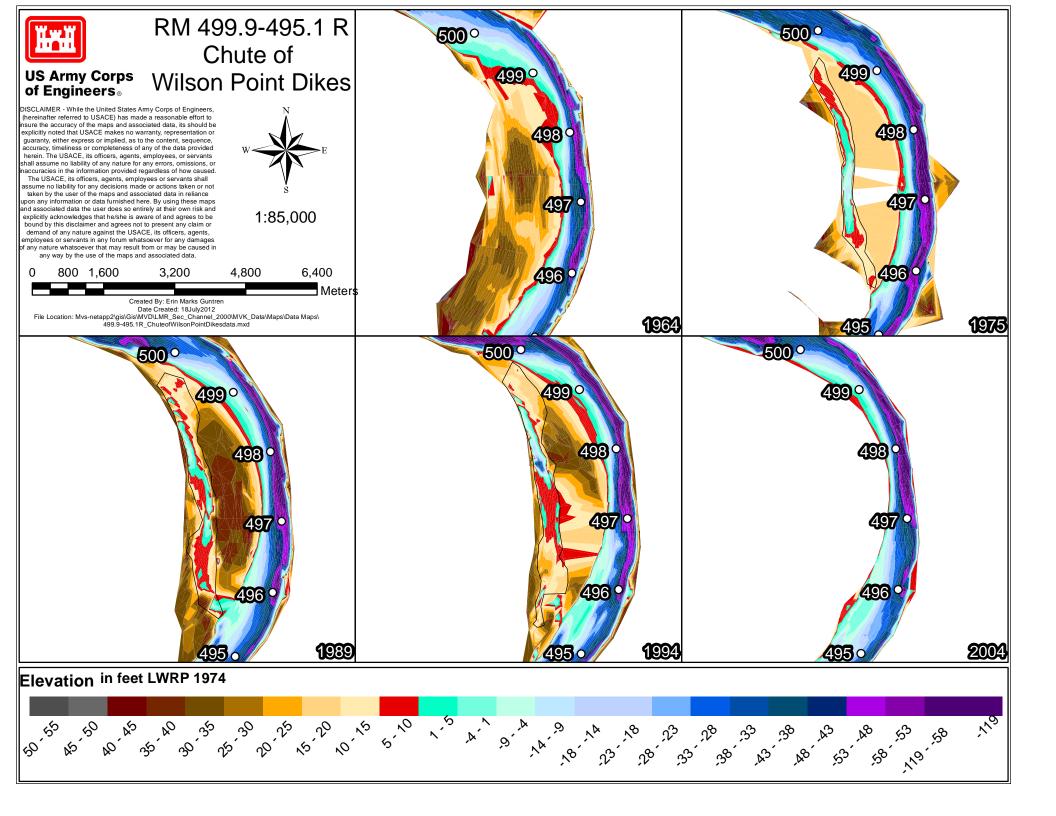
4,400

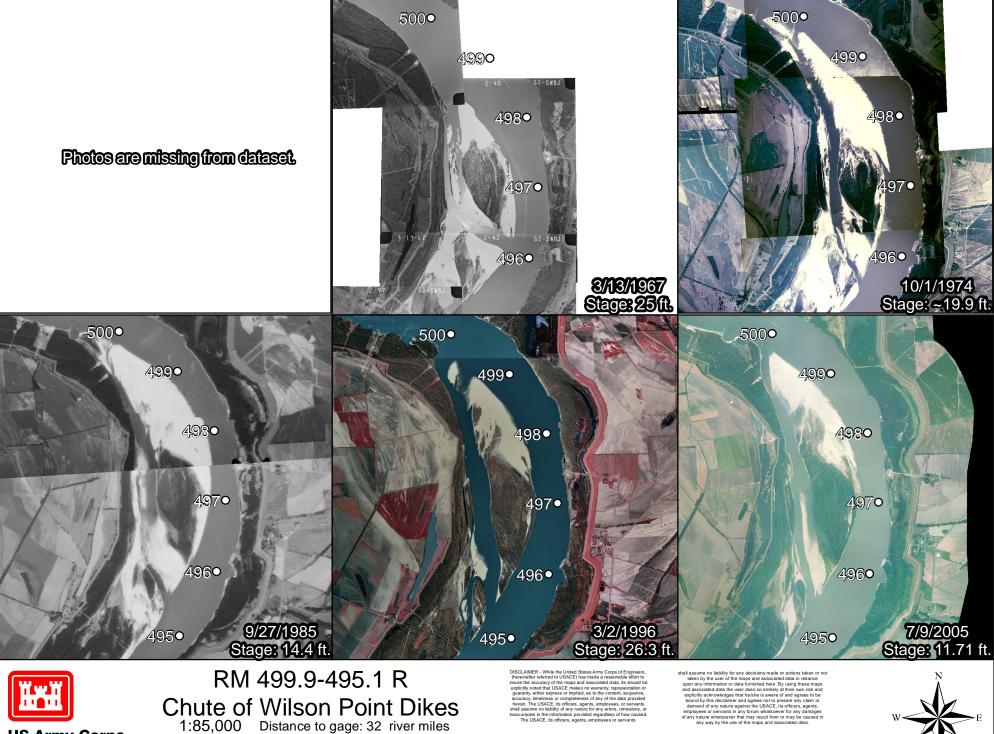
6,600

8,800

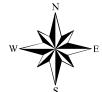












Created by: Erin Marks Guntren Date Created: 11 August2012 499.9-495.1R_ChuteofWilsonPointDikesphotos.mxd

900 1,800

5,400

3,600

7,200

Appendix J: Reach J – River Miles 494-444 Vicksburg District

Eighteen secondary channels were identified in Reach J (see below). Only eight secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table J1. Secondary channels and their upstream river mile for Reach J; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile	Name	River Mile
Chute 2 of Baleshed /Ben Lomond Dikes	493L	Chute 5 Outside Ajax Bar Dikes	482.5L	Chute of Willow Cutoff Dikes	461.2R
Chute Below Longwood Landing	492.7R	Chute 6 Below Ajax Bar Dikes	480.3L	Chute at Milliken Bend	456.6L
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7L	Chute at Fitler Bend	476.4R	Chute 1 of Forest Home Towhead Dikes	453.2L
Chute 1 of Baleshed Landing Dikes	492.2L	Chute of Cottonwood Bar	470.7R	Chute 2 of Forest Home Towhead Dikes	451.2L
Chute at Lake Providence Harbor	485R	Chute of Arcadia Point	470.2L	Chute 3 of Forest Home Towhead Dikes	448.8L
Chute 4 of Ajax Bar Dikes	485.3L	Chute of Tennessee Bar Dikes	465.2L	Chute Below Marshall Cutoff Dikes	447.2R

Reach Summary

Table J2. Sum of Reach J area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yd3)			
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	100%	940	1,550	2,050	2,640	20,172,000	53,746,000	
1975	99%	1,520	2,100	2,710	3,000	43,231,000	85,996,000	
1994	100%	1,090	1,760	2,590	3,560	30,747,000	72,952,000	
2000	98%	500	930	1,620	2,270	13,902,000	40,085,000	

Table J3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach J. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline. *In 1964-89 and 2000, Chute 3 of Baleshed/Ben Lomond/Ajax was two separate side channels, Baleshed/Bend Lomond and Ajax Bar Dikes.

Chute	Year	Cvrg.		Area (Acres)	Volume (yd³)			
Citate	Miles	icai	CVIG.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 2 of Baleshed /Ben Lomond Dikes	493- 485.6L	1964	100%	700	1,090	1,360	1,670	14,488,000	36,800,000
Chute 2 of Baleshed /Ben Lomond Dikes	493- 485.6L	1975	100%	420	710	1,010	1,160	9,737,000	25,516,000
Chute 2 of Baleshed /Ben Lomond Dikes	493- 485.6L	1989	100%	280	390	540	770	6,945,000	15,872,000
Chute 2 of Baleshed /Ben Lomond Dikes	493- 485.6L	1994	100%	492.7L	492.7L	492.7L	492.7L	492.7L	492.7L
Chute 2 of Baleshed /Ben Lomond Dikes	493- 485.6L	2000	100%	210	420	820	1,130	5,105,000	18,137,000
Chute Below Longwood Landing	492.7- 491.9R	1964	100%	0	0	0	0	0	0
Chute Below Longwood Landing	492.7- 491.9R	1975	100%	0	0	0	0	0	0
Chute Below Longwood Landing	492.7- 491.9R	1989	100%	0	0	10	40	1,000	228,000
Chute Below Longwood Landing	492.7- 491.9R	1994	100%	0	0	0	0	0	0
Chute Below Longwood Landing	492.7- 491.9R	2000	100%	0	0	0	0	0	0
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7- 480L	1964	100%	*	*	*	*	*	*
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7- 480L	1975	100%	*	*	*	*	*	*
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7- 480L	1989	100%	*	*	*	*	*	*
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7- 480L	1994	100%	580	970	1,430	2,060	16,905,000	40,485,000
Chute 3 of Baleshed/Ben Lomond/Ajax Dikes	492.7- 480L	2000	100%	*	*	*	*	*	*
Chute 1 of Baleshed Landing Dikes	492.2- 491.7L	1964	100%	493L	493L	493L	493L	493L	493L

Chute	River	Year	Cvrg.		Area (Acres)	Volume (yd³)		
Criute	Miles			-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 1 of Baleshed Landing Dikes	492.2- 491.7L	1975	100%	493L	493L	493L	493L	493L	493L
Chute 1 of Baleshed Landing Dikes	492.2- 491.7L	1989	100%	10	30	120	130	166,000	1,683,000
Chute 1 of Baleshed Landing Dikes	492.2- 491.7L	1994	100%	492.7L	492.7L	492.7L	492.7L	492.7L	492.7L
Chute 1 of Baleshed Landing Dikes	492.2- 491.7L	2000	100%	493L	493L	493L	493L	493L	493L
Chute 4 of Ajax Bar Dikes	485.3- 483.5L	1964	100%	100	180	280	440	1,979,000	6,608,000
Chute 4 of Ajax Bar Dikes	485.3- 483.5L	1975	100%	620	860	1,110	1,220	19,283,000	36,813,000
Chute 4 of Ajax Bar Dikes	485.3- 483.5L	1989	100%	460	670	990	1,250	13,079,000	28,852,000
Chute 4 of Ajax Bar Dikes	485.3- 483.5L	1994	100%	492.7L	492.7L	492.7L	492.7L	492.7L	492.7L
Chute 4 of Ajax Bar Dikes	485.3- 483.5L	2000	85%	100	140	220	340	3,653,000	7,293,000
Chute at Lake Providence Harbor	485- 483.7R	1964	100%	30	40	60	140	684,000	1,758,000
Chute at Lake Providence Harbor	485- 483.7R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Lake Providence Harbor	485- 483.7R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Lake Providence Harbor	485- 483.7R	1994	100%	0	0	0	0	0	0
Chute at Lake Providence Harbor	485- 483.7R	2000	100%	0	0	0	0	0	0
Chute 5 Outside Ajax Bar Dikes	482.5- 481.5L	1964	100%	0	0	0	0	0	0
Chute 5 Outside Ajax Bar Dikes	482.5- 481.5L	1975	100%	485.3L	485.3L	485.3L	485.3L	485.3L	485.3L
Chute 5 Outside Ajax Bar Dikes	482.5- 481.5L	1989	100%	485.3L	485.3L	485.3L	485.3L	485.3L	485.3L
Chute 5 Outside Ajax Bar Dikes	482.5- 481.5L	1994	100%	20	40	80	140	594,000	1,964,000
Chute 5 Outside Ajax Bar Dikes	482.5- 481.5L	2000	100%	0	0	0	0	0	0
Chute 6 Below Ajax Bar Dikes	480.3- 479.8L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 6 Below Ajax Bar Dikes	480.3- 479.8L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Chute	River	Year	Come		Area (Acres)	Volume (yd³)		
Criute	Miles	ICai	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 6 Below Ajax Bar Dikes	480.3- 479.8L	1989	100%	0	0	0	0	0	0
Chute 6 Below Ajax Bar Dikes	480.3- 479.8L	1994	100%	0	0	20	40	0	359,000
Chute 6 Below Ajax Bar Dikes	480.3- 479.8L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fitler Bend	476.4- 475R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fitler Bend	476.4- 475R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fitler Bend	476.4- 475R	1989	100%	0	0	0	0	0	0
Chute at Fitler Bend	476.4- 475R	1994	100%	0	0	0	30	0	51,000
Chute at Fitler Bend	476.4- 475R	2000	100%	0	0	0	0	0	0
Chute of Cottonwood Bar	470.7- 468R	1964	100%	0	0	0	0	0	0
Chute of Cottonwood Bar	470.7- 468R	1975	100%	0	0	0	0	0	0
Chute of Cottonwood Bar	470.7- 468R	1989	100%	560	740	860	950	14,159,000	27,927,000
Chute of Cottonwood Bar	470.7- 468R	1994	100%	330	520	740	850	9,130,000	20,690,000
Chute of Cottonwood Bar	470.7- 468R	2000	100%	190	360	590	800	5,144,000	14,655,000
Chute of Arcadia Point	470.2- 466.8L	1964	100%	150	280	420	530	3,705,000	10,338,000
Chute of Arcadia Point	470.2- 466.8L	1975	95%	480	530	590	620	14,210,000	23,667,000
Chute of Arcadia Point	470.2- 466.8L	1989	100%	150	240	430	620	4,506,000	11,398,000
Chute of Arcadia Point	470.2- 466.8L	1994	100%	160	240	350	500	4,117,000	9,812,000
Chute of Arcadia Point	470.2- 466.8L	2000	100%	0	0	0	0	0	0
Chute of Tennessee Bar Dikes	465.2- 463.8L	1964	100%	0	0	0	0	0	0
Chute of Tennessee Bar Dikes	465.2- 463.8L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Tennessee Bar Dikes	465.2- 463.8L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Chuto	River	Year	Cvrg.		Area (Acres)	Volume (yd³)		
Chute	Miles	icai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Tennessee Bar Dikes	465.2- 463.8L	1994	100%	0	0	0	0	0	0
Chute of Tennessee Bar Dikes	465.2- 463.8L	2000	100%	0	0	40	150	2,000	890,000
Chute of Willow Cutoff Dikes	461.2- 459.2R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Willow Cutoff Dikes	461.2- 459.2R	1975	100%	130	160	210	280	2,671,000	6,176,000
Chute of Willow Cutoff Dikes	461.2- 459.2R	1989	100%	0	20	70	200	99,000	1,487,000
Chute of Willow Cutoff Dikes	461.2- 459.2R	1994	100%	10	50	120	250	207,000	2,287,000
Chute of Willow Cutoff Dikes	461.2- 459.2R	2000	100%	0	0	50	100	3,000	814,000
Chute at Milliken Bend	456.6- 454.6L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Milliken Bend	456.6- 454.6L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Milliken Bend	456.6- 454.6L	1989	100%	0	0	0	0	0	0
Chute at Milliken Bend	456.6- 454.6L	1994	100%	0	0	10	50	10,000	283,000
Chute at Milliken Bend	456.6- 454.6L	2000	100%	0	0	0	0	0	0
Chute 1 of Forest Home Towhead Dikes	453.2- 451.8L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Forest Home Towhead Dikes	453.2- 451.8L	1975	100%	0	0	0	0	0	0
Chute 1 of Forest Home Towhead Dikes	453.2- 451.8L	1989	100%	0	0	0	0	0	0
Chute 1 of Forest Home Towhead Dikes	453.2- 451.8L	1994	100%	0	10	60	100	26,000	998,000
Chute 1 of Forest Home Towhead Dikes	453.2- 451.8L	2000	100%	0	0	10	30	12,000	214,000
Chute 2 of Forest Home Towhead Dikes	451.2- 449.7L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Chute River		er Year	ar Cvrg.		Area (Acres)	Volume (yd³)		
Critice	Miles	icai	CVIG.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 2 of Forest Home Towhead Dikes	451.2- 449.7L	1975	100%	30	50	70	90	491,000	1,598,000
Chute 2 of Forest Home Towhead Dikes	451.2- 449.7L	1989	100%	0	0	0	0	0	0
Chute 2 of Forest Home Towhead Dikes	451.2- 449.7L	1994	100%	20	40	50	60	388,000	1,182,000
Chute 2 of Forest Home Towhead Dikes	451.2- 449.7L	2000	100%	0	0	30	100	5,000	595,000
Chute 3 of Forest Home Towhead Dikes	448.8- 447.8L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 3 of Forest Home Towhead Dikes	448.8- 447.8L	1975	100%	150	170	190	210	5,302,000	8,406,000
Chute 3 of Forest Home Towhead Dikes	448.8- 447.8L	1989	100%	10	20	40	50	157,000	741,000
Chute 3 of Forest Home Towhead Dikes	448.8- 447.8L	1994	100%	0	0	0	0	0	0
Chute 3 of Forest Home Towhead Dikes	448.8- 447.8L	2000	100%	0	0	0	0	0	0
Chute Below Marshall Cutoff Dikes	447.2- 446R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Below Marshall Cutoff Dikes	447.2- 446R	1975	100%	40	50	70	120	935,000	2,213,000
Chute Below Marshall Cutoff Dikes	447.2- 446R	1989	100%	0	0	20	130	5,000	659,000
Chute Below Marshall Cutoff Dikes	447.2- 446R	1994	100%	0	0	10	40	0	142,000
Chute Below Marshall Cutoff Dikes	447.2- 446R	2000	100%	0	0	10	80	2,000	300,000

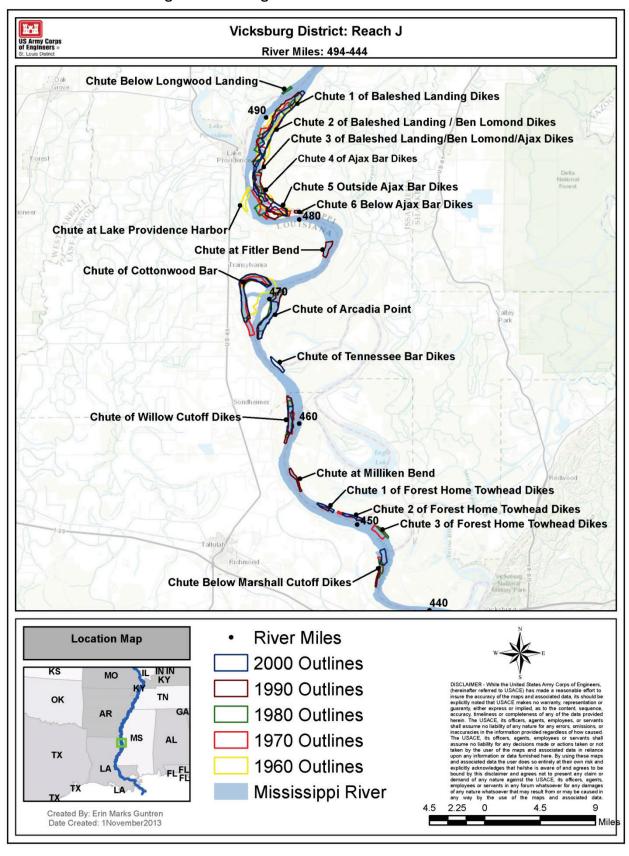
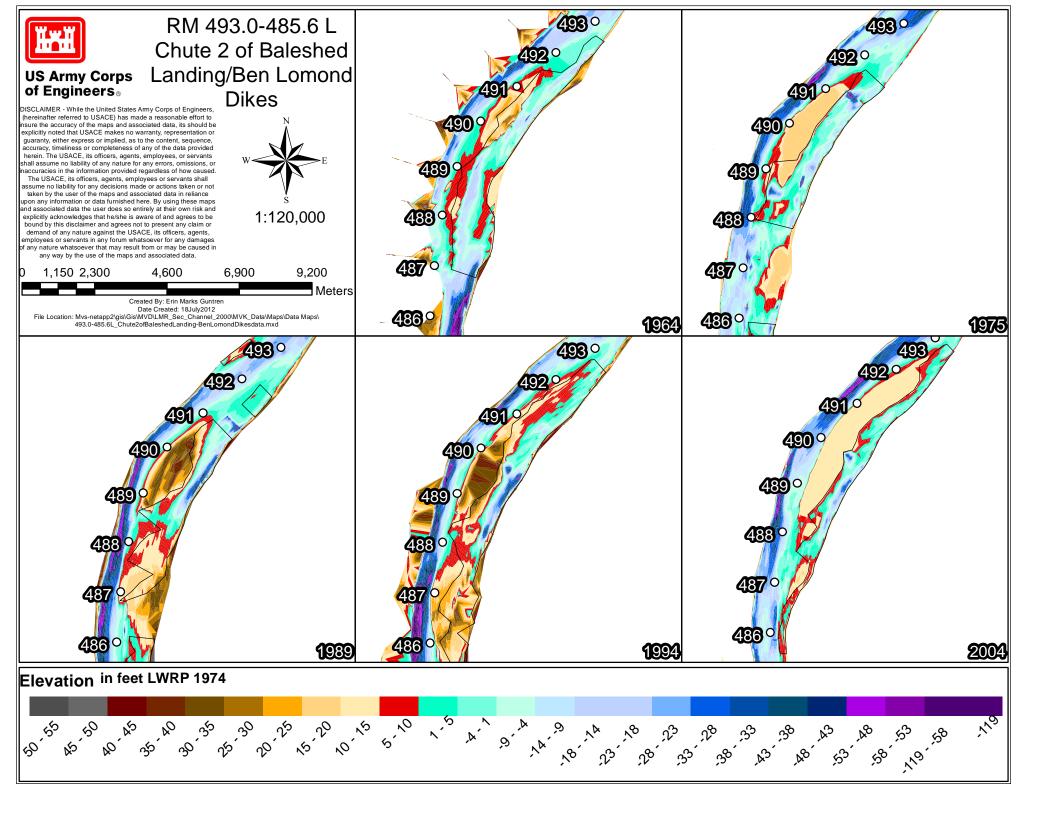
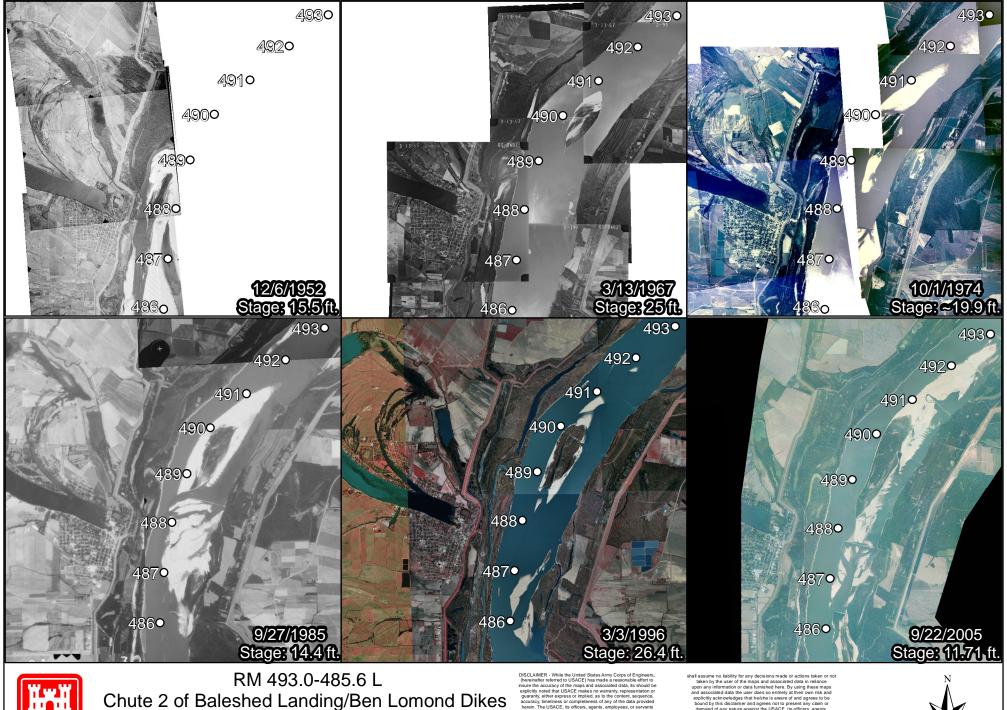


Figure J1. Vicksburg District Reach J river miles 494-444.





US Army Corps of Engineers.

1:120,000 Distance to gage: 38 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 493.0-485.6L_Chute2ofBaleshedLandingBenLomondDikesphotos.mxd

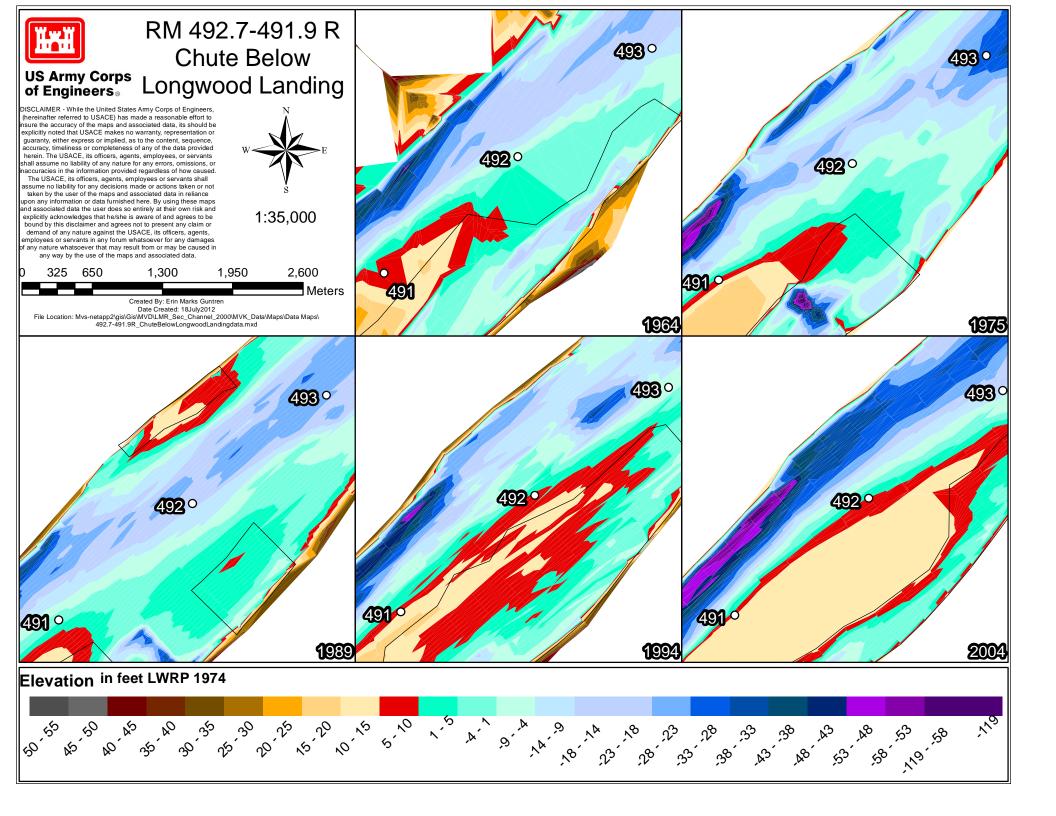
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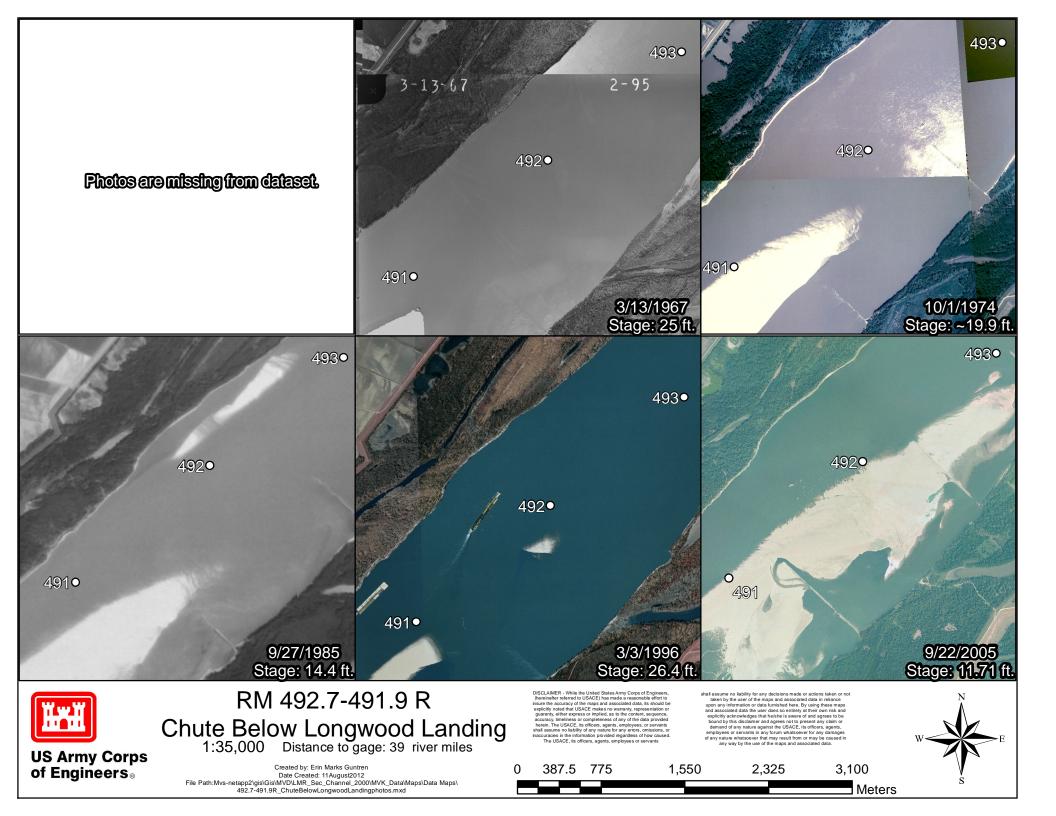
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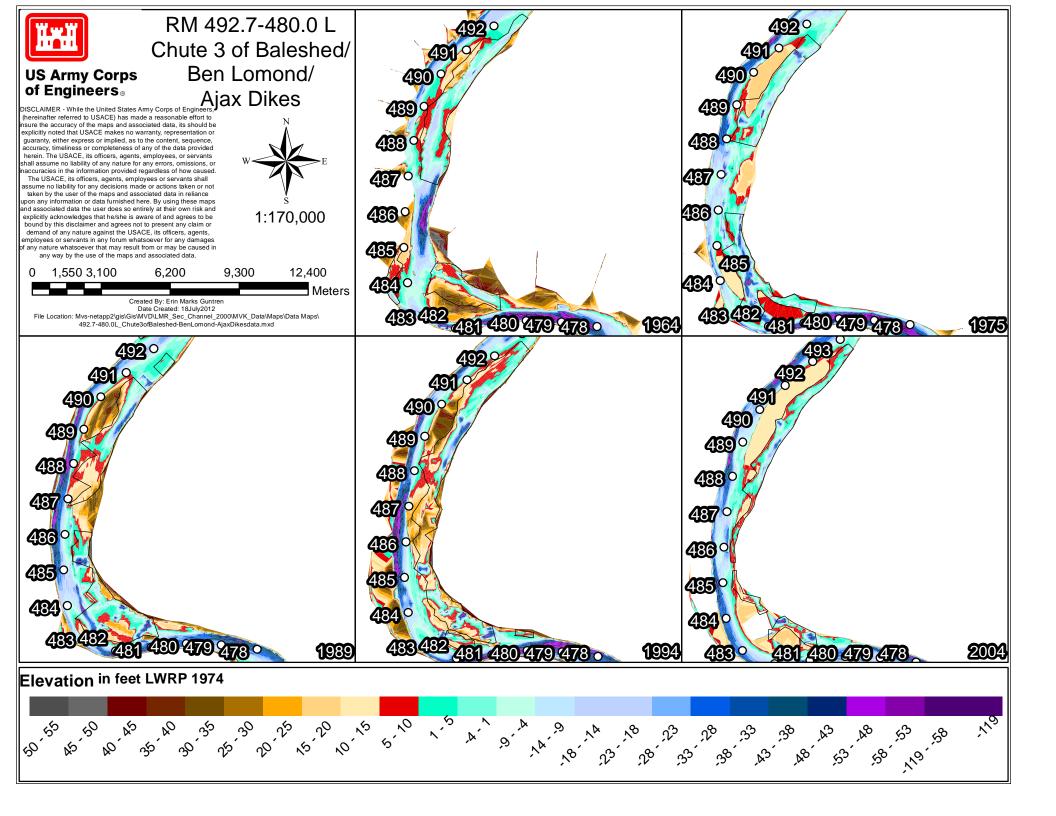


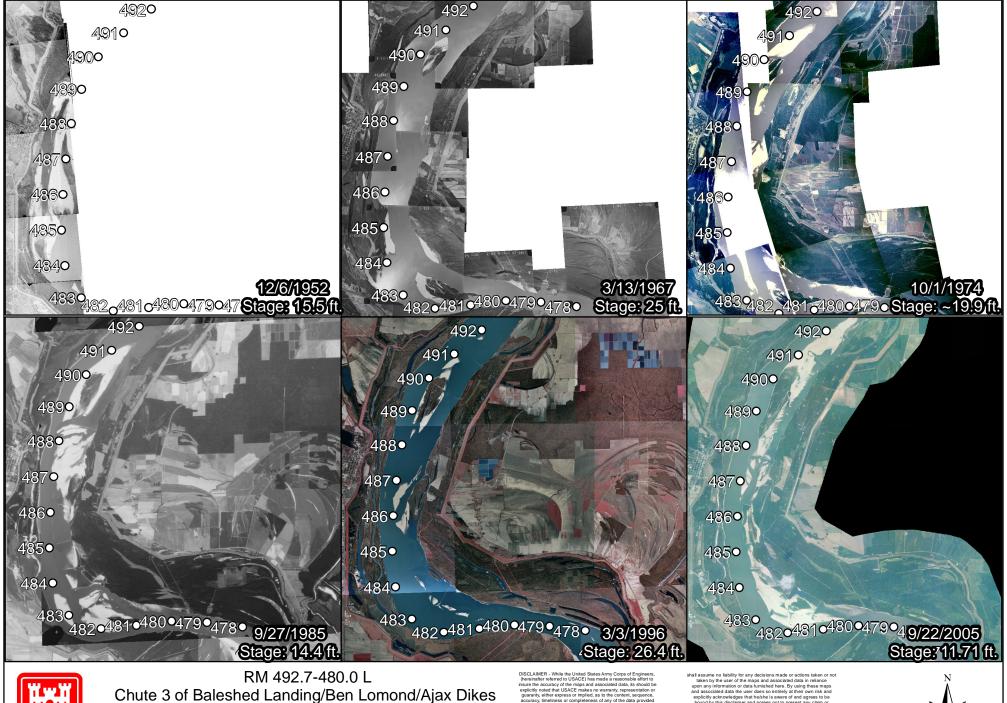
1,300 2,600

5,200 7,800 10,400







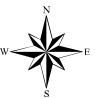


US Army Corps of Engineers.

1:170,000 Distance to gage: 39 river miles

Created by: Erin Marks Guntren Date Created: 11August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 492.7-480.0L Chute3ofBaleshedLandingBenLomondAjaxDikesphotos.mxd

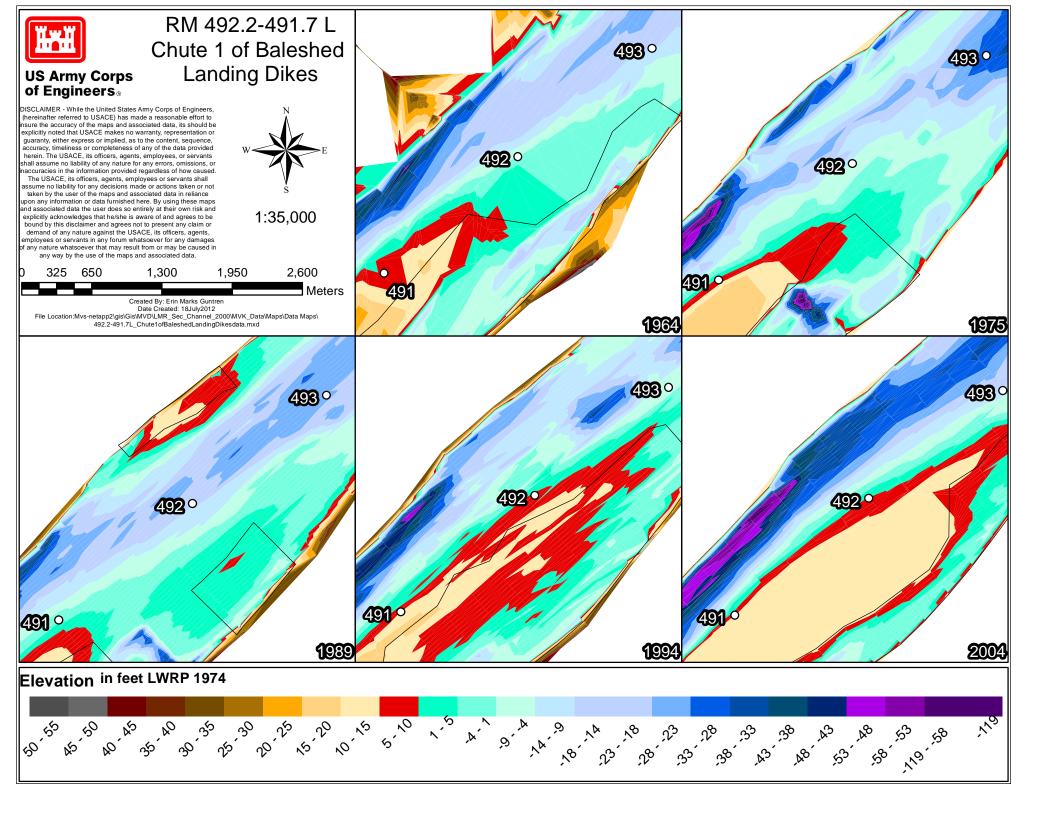
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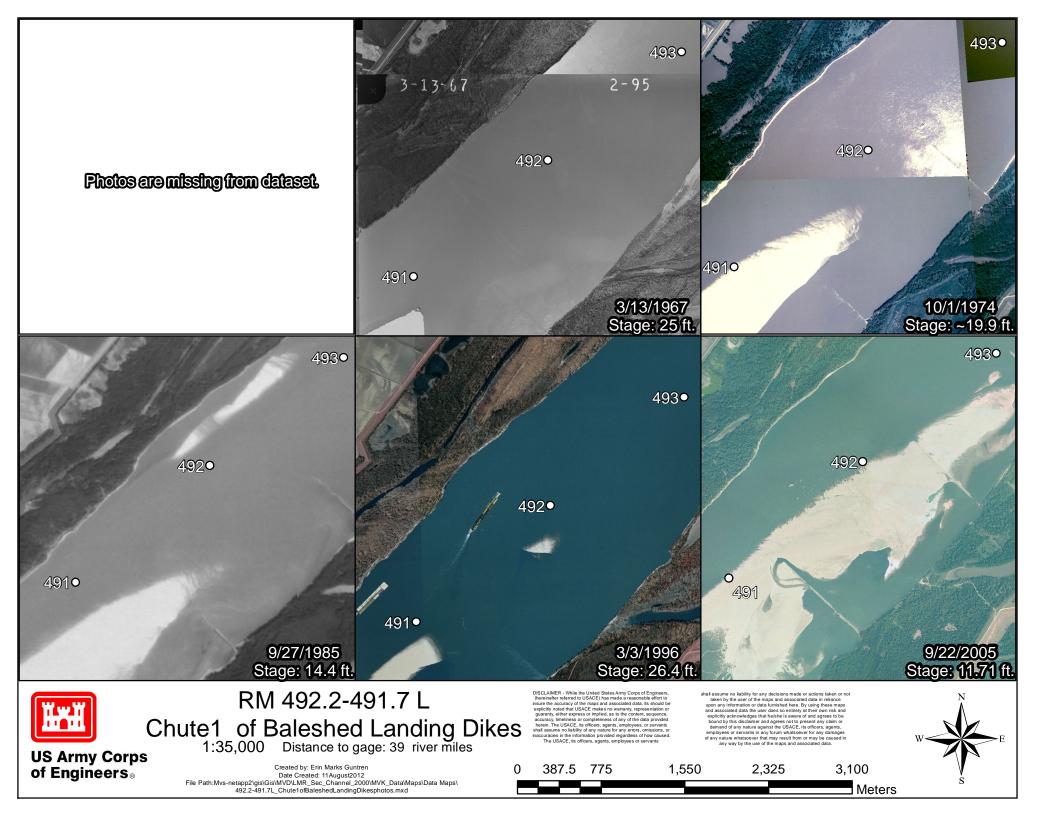


1,875 3,750

7,500

15,000 11,250



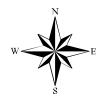


US Army Corps of Engineers®

RM 485.3-483.5 L Chute 4 of Ajax Bar Dikes

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1:65,000

any way by the use of the maps and associated data. 600 1,200 2,400

3,600

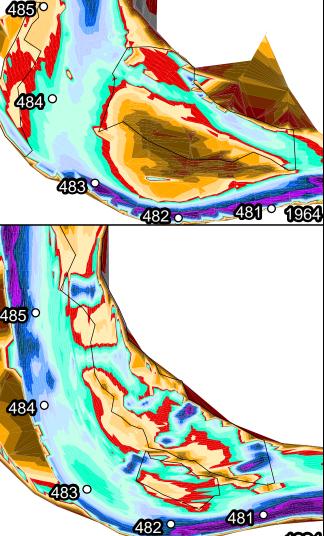
4,800

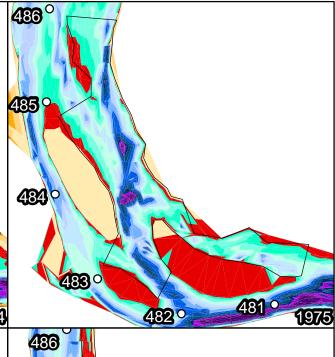
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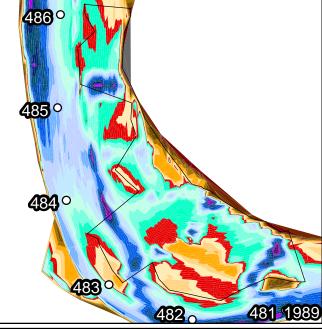
Meters

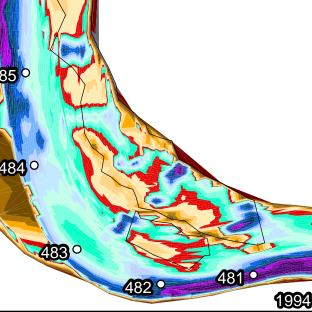
Created By: Erin Marks Guntren

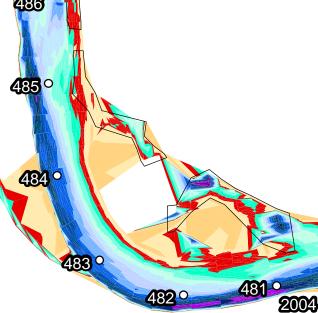
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485.3-483.5L_Chute4otAjaxBarDikesdata.mxd



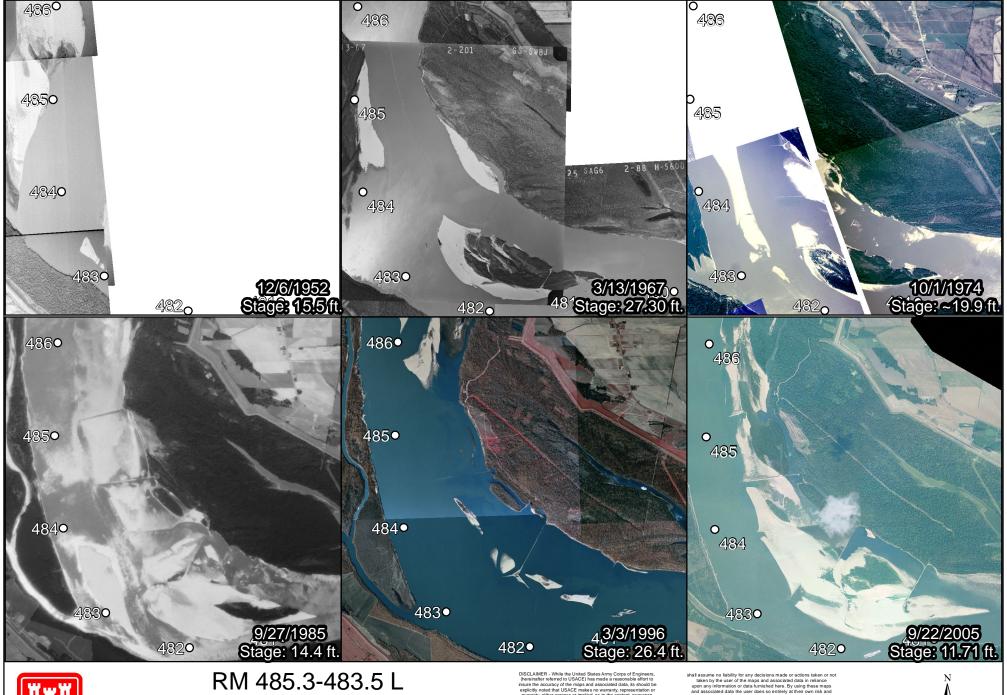








Elevation in feet LWRP 1974





RM 485.3-483.5 L Chute 4 of Ajax Bar Dikes 1:65,000 Distance to gage: 50 river miles

Created by: Erin Marks Guntren
Date Created: 11 August2012
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485.3-483.5L_Chute40/jayaba70likesphotos.mxd

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2,800

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0 700 1,400

4,200 5,600

US Army Corps of Engineers

RM 485.0-483.7 R Chute at Lake Providence Harbor

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1:65,000

600 1,200

2,400

3,600

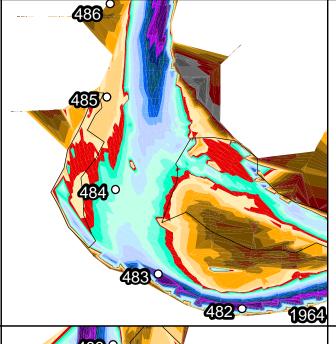
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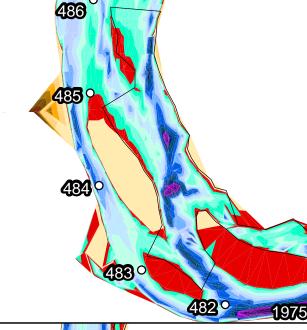
Meters

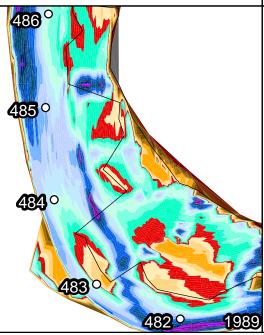
Created By: Erin Marks Guntrer

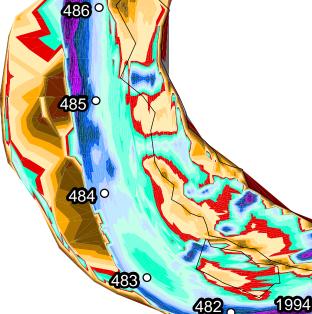
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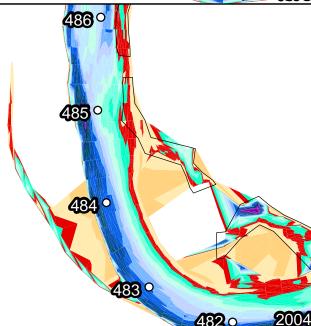
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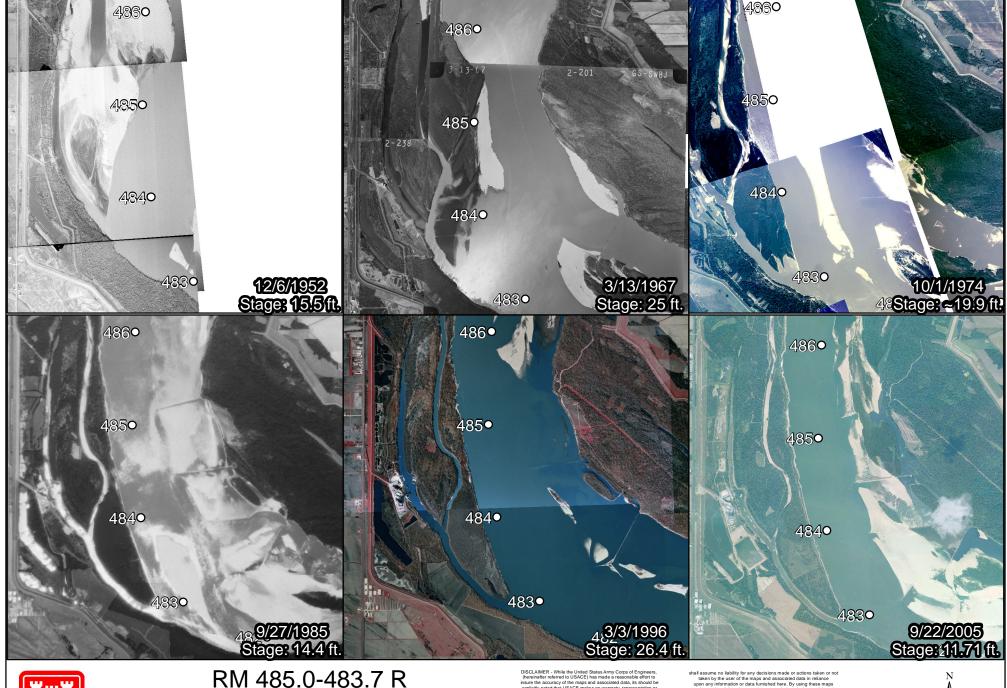








Elevation in feet LWRP 1974





Chute at Lake Providence Harbor 1:65,000 Distance to gage: 50 river miles

US Army Corps of Engineers.

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
485.0-483.7R_ChuteatLakeProvidenceHarborphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

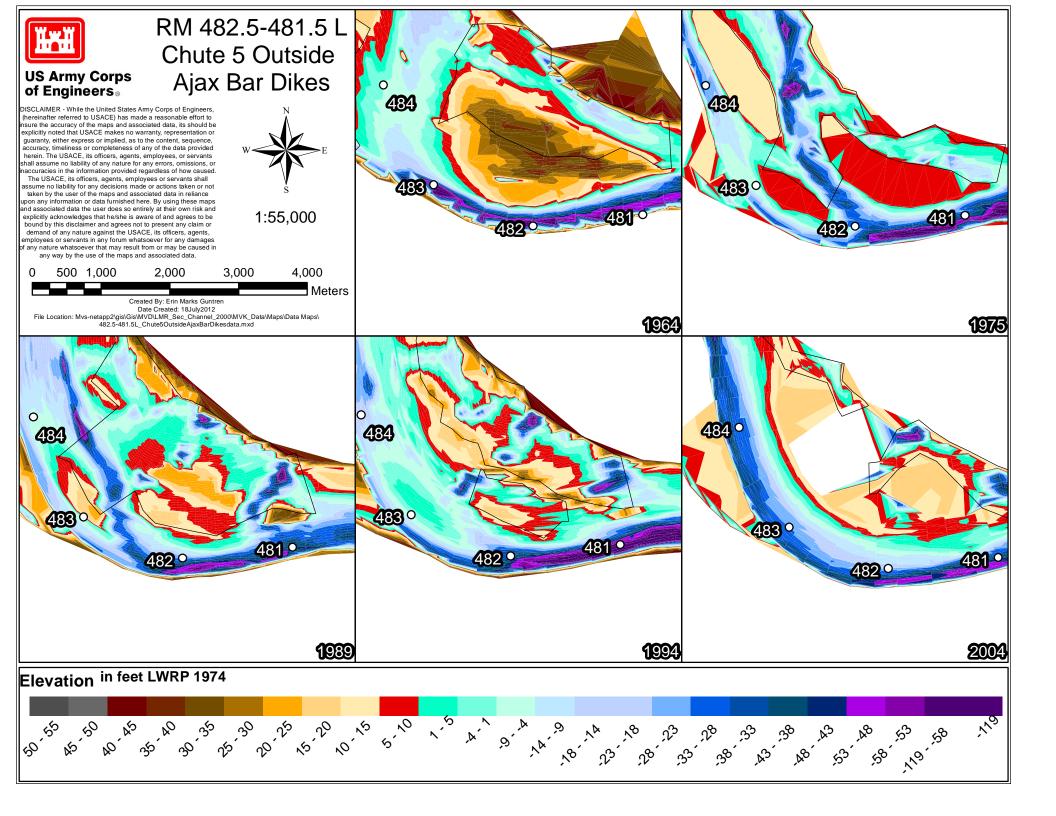
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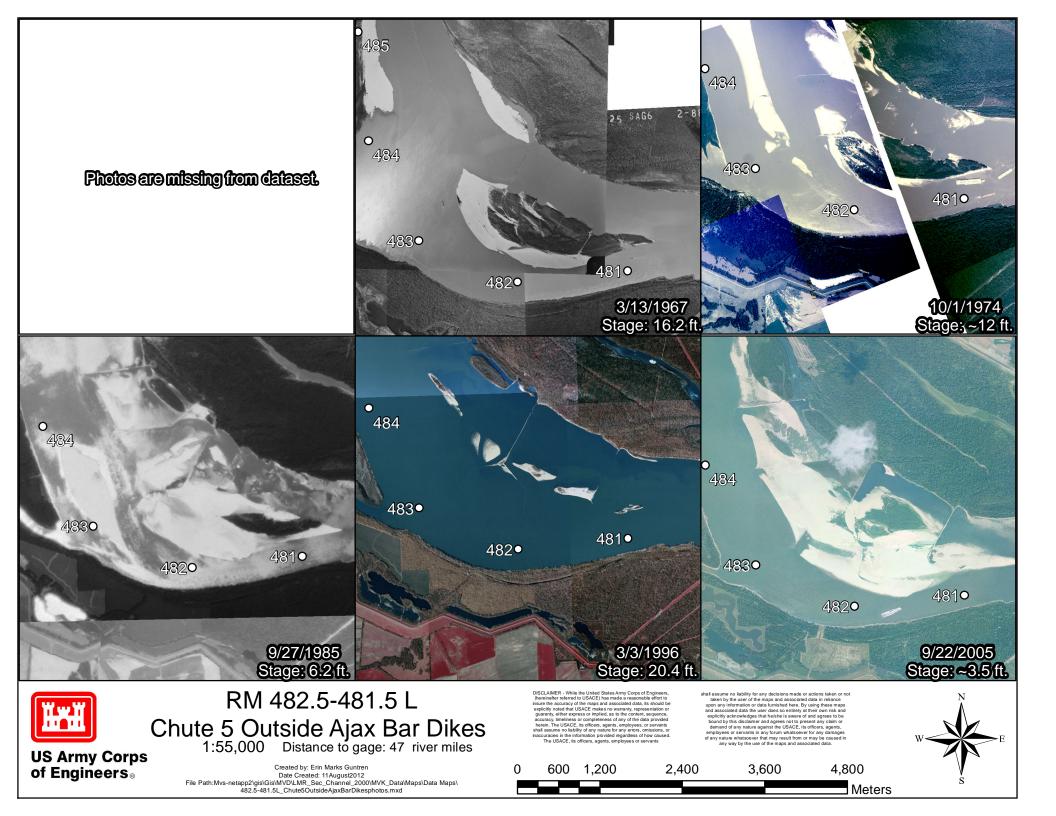


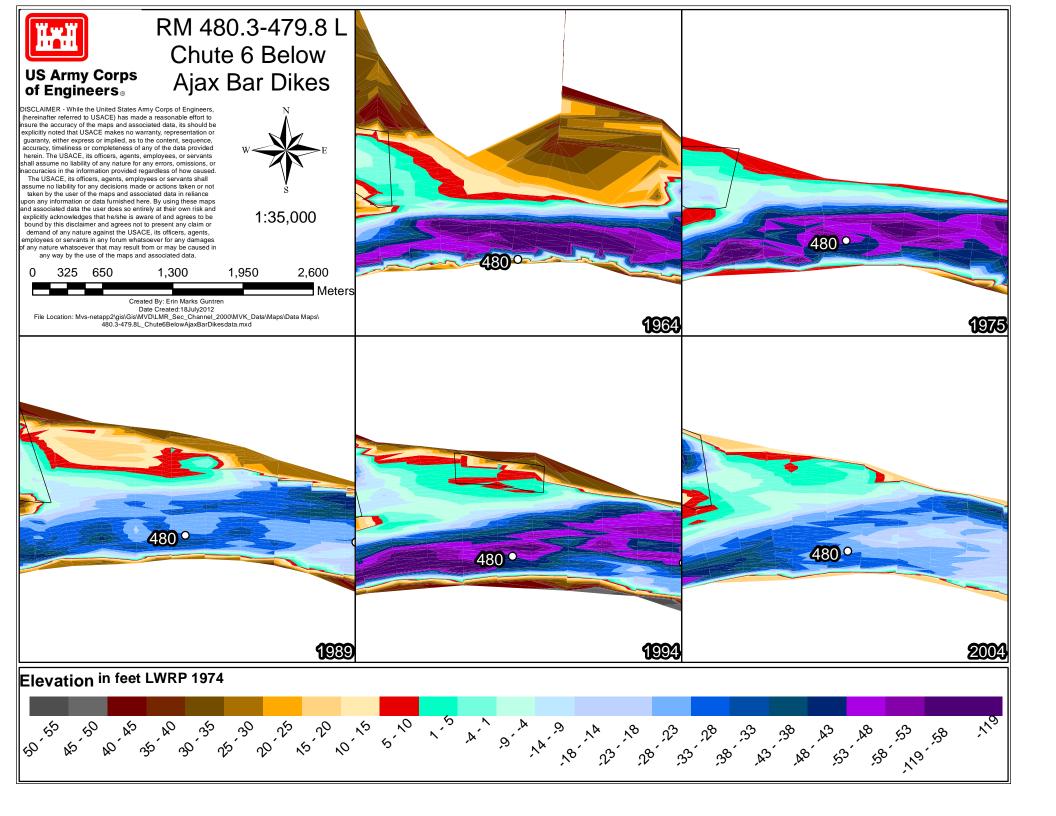
700 1,400

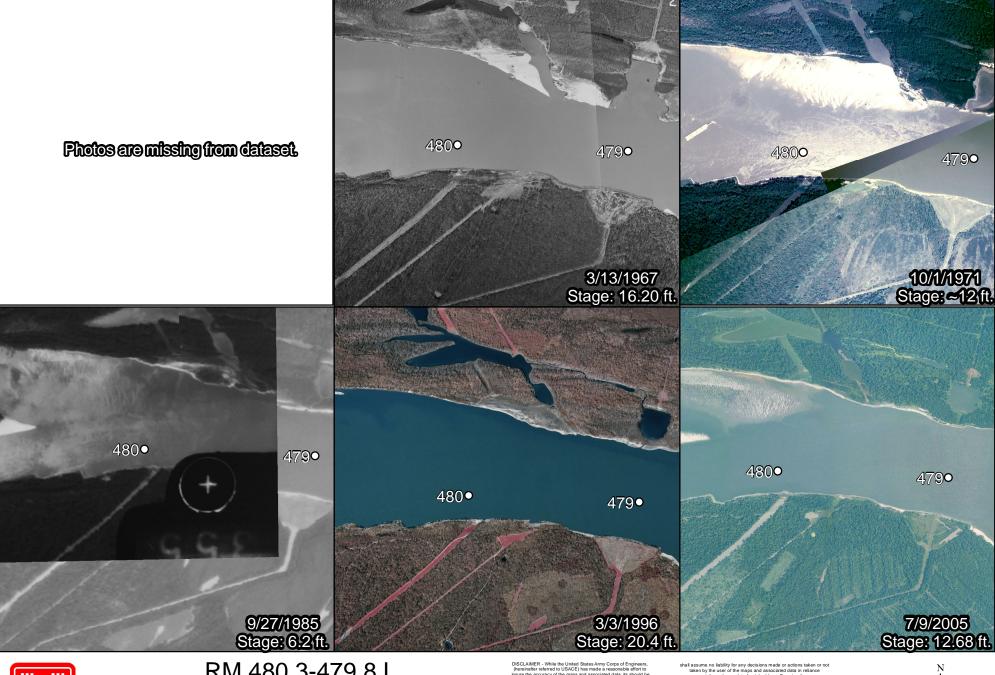
2,800

4,200 5,600











RM 480.3-479.8 L Chute 6 Below Ajax Bar Dikes 1:35,000 Distance to gage: 45 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
480.3-479.8L_Chute6BelowAjaxBarDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be the state of the s

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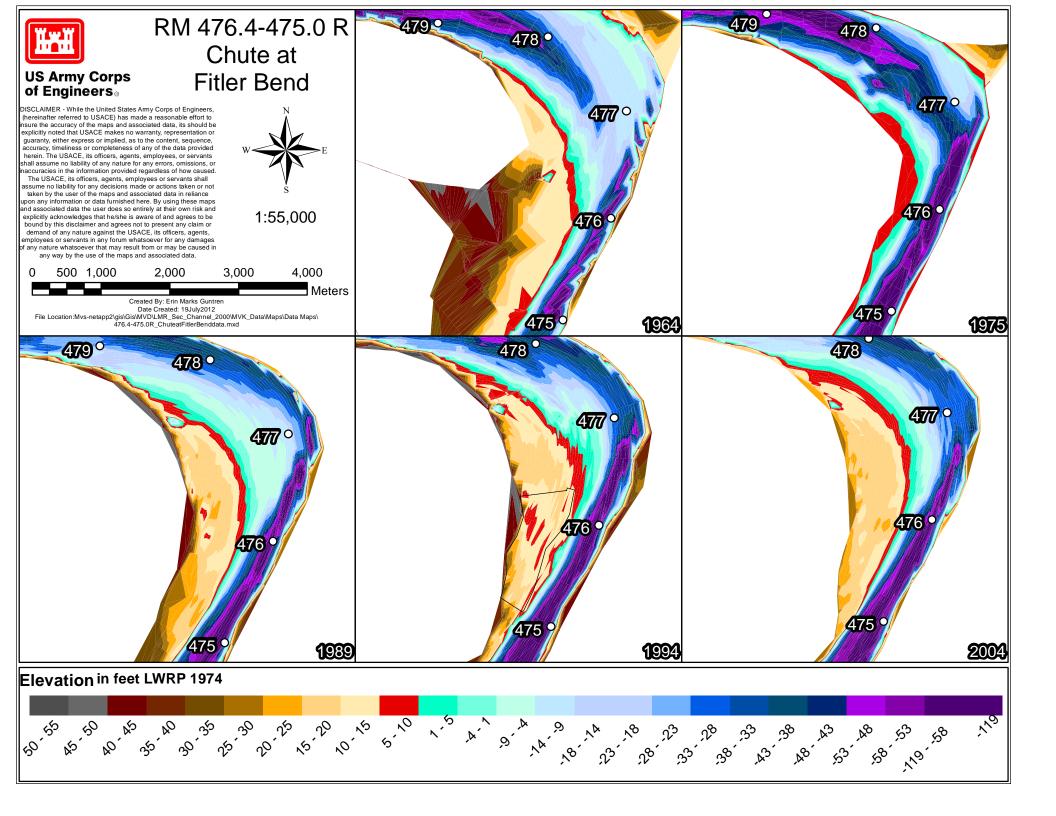
2,325

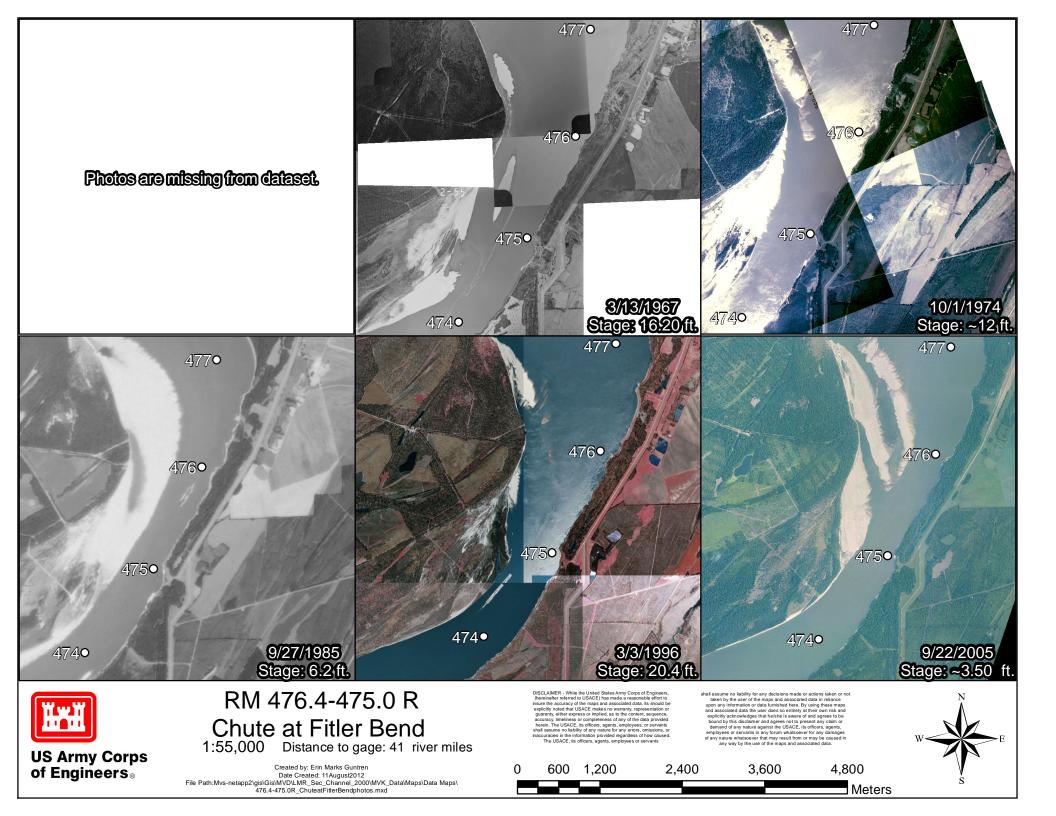


387.5 775

1,550

3,100





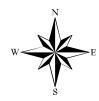


US Army Corps of Engineers

RM 470.7-468.0 R Chute of Cottonwood Bar

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1:85,000

800 1,600

3,200

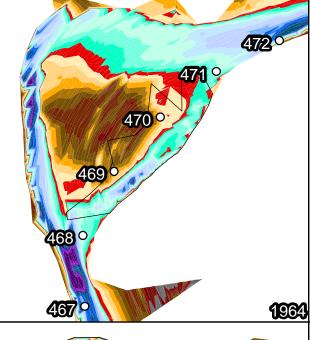
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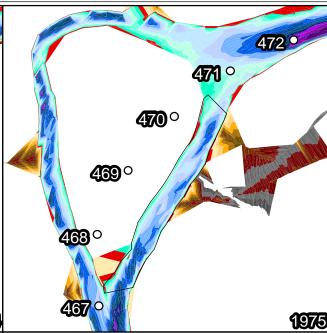
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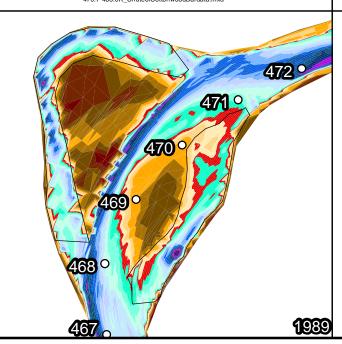
Meters

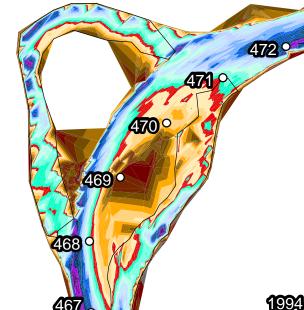
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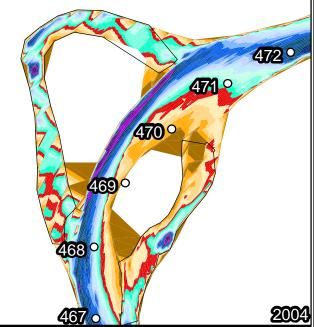
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470.7-468.0R ChuteofCottonwoodBardata.mxd



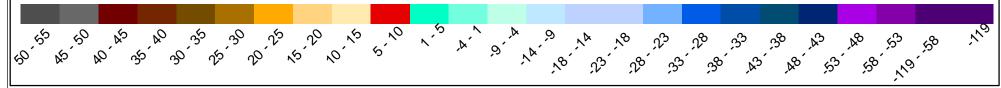


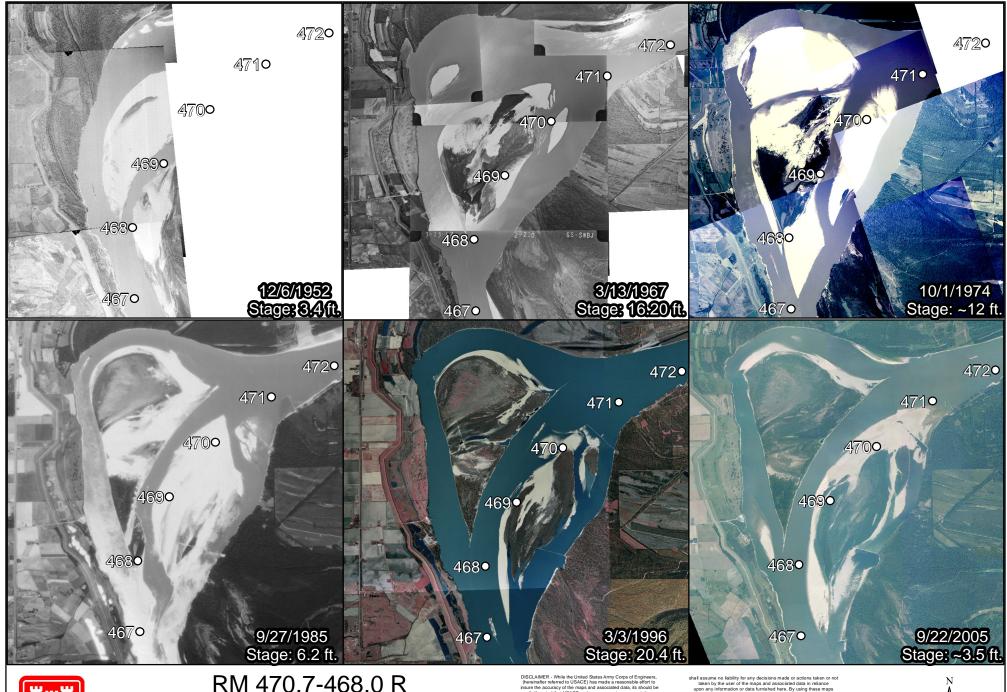






Elevation in feet LWRP 1974







RM 470.7-468.0 R Chute of Cottonwood Bar

1:85,000 Distance to gage: 35 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 470.7-468.0R_ChuteofCottonwoodBarphotos.mxd

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5,400



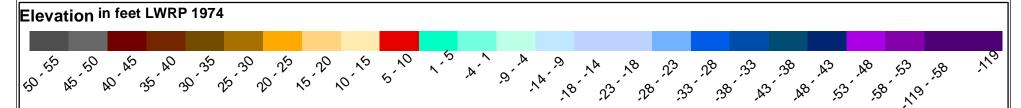
3,600 900 1,800

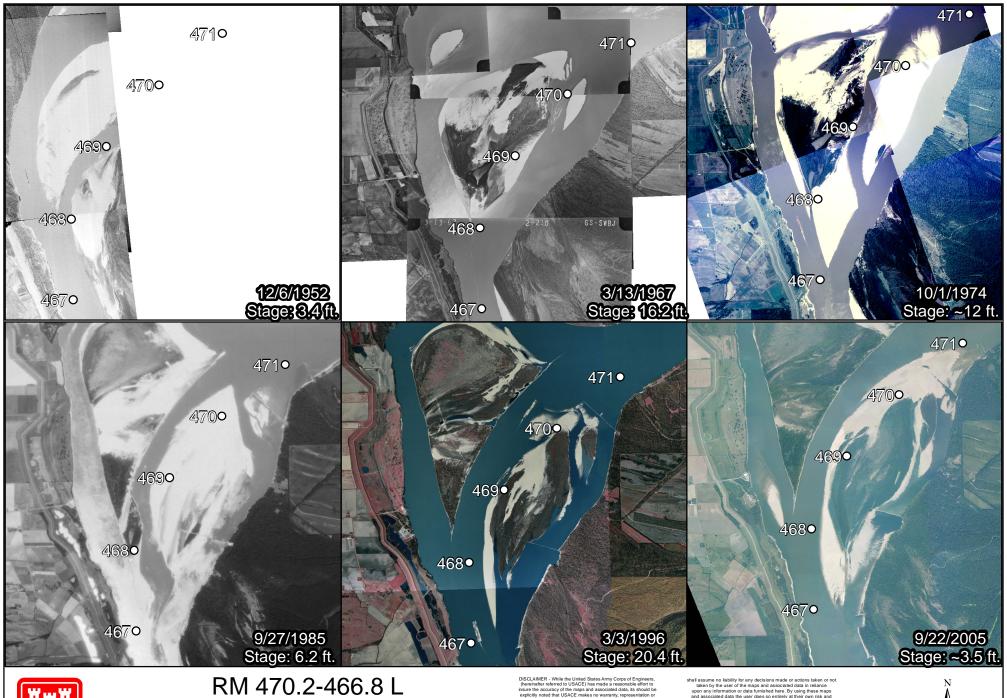
7,200

4710 RM 470.2-466.8 L Chute of **470**° US Army Corps of Engineers **Arcadia Point** DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be **469**° explicitly noted that USACE makes no warranty, representation or 469° guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps **468**° and associated data the user does so entirely at their own risk and 1:75,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 700 1,400 2,800 4,200 5,600 467 Meters Created By: Erin Marks Guntrer Date Created:18July2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 1964 470.2-466.8L ChuteofArcadiaPointdata.mxd 4710 1989 1994

1975

2004







Chute of Arcadia Point 1:75,000 Distance to gage: 35 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 470.2-466.8L_ChuteofArcadiaPointphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

3,200

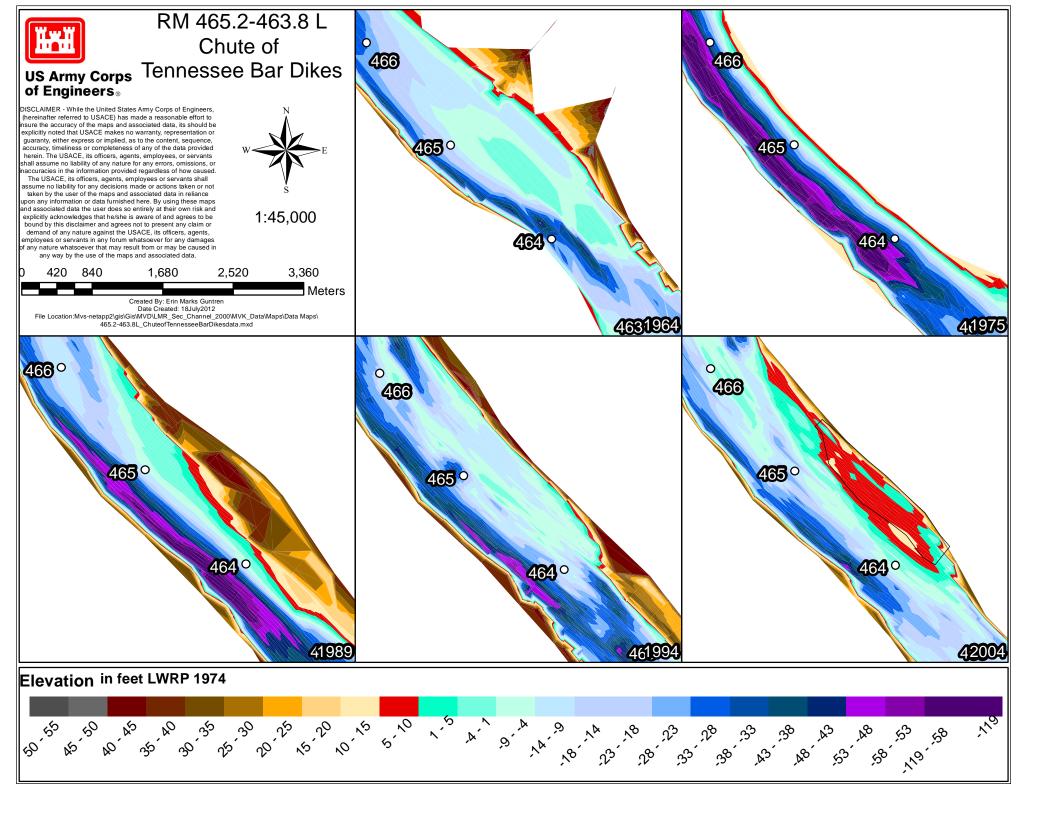
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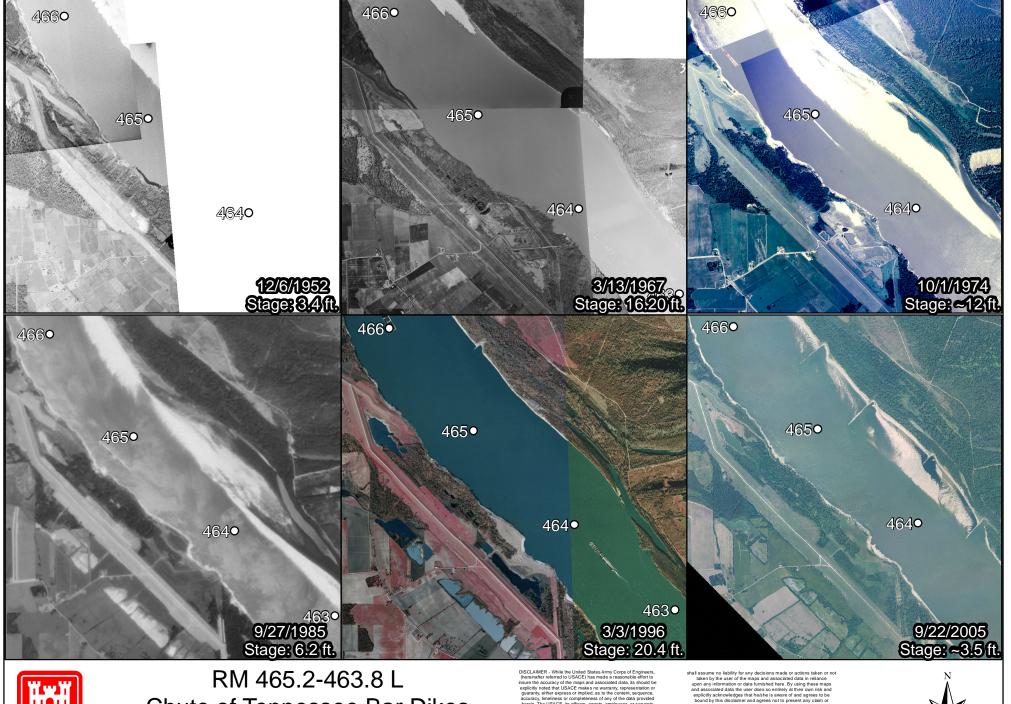


800 1,600

4,800

6,400





US Army Corps of Engineers.

Chute of Tennessee Bar Dikes

1:45,000 Distance to gage: 30 river miles

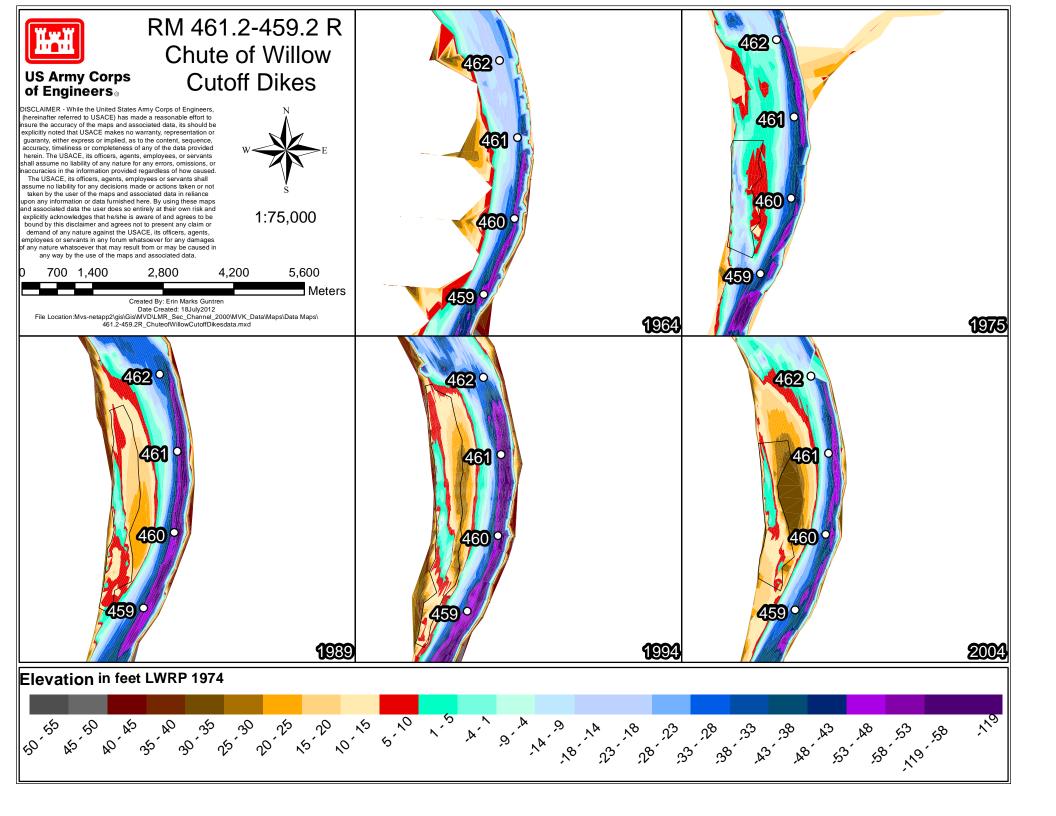
Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
465.2-463.8L_ChuteofTennesseeBarDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be the state of the s

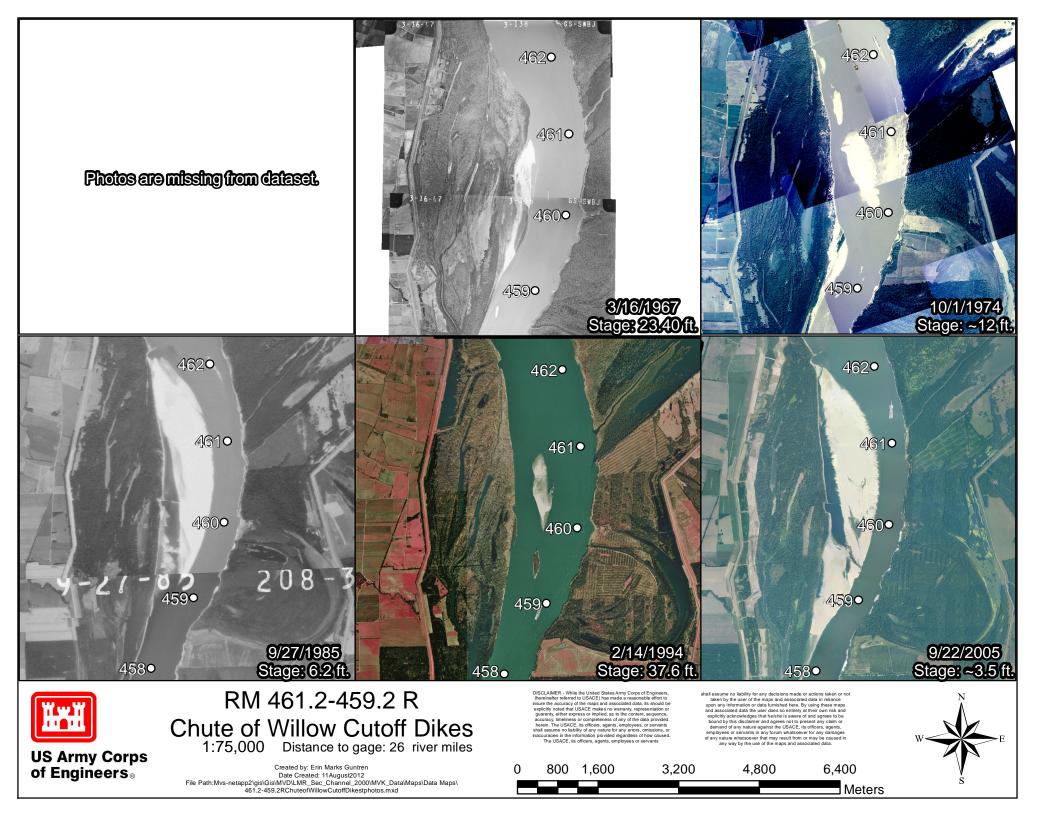
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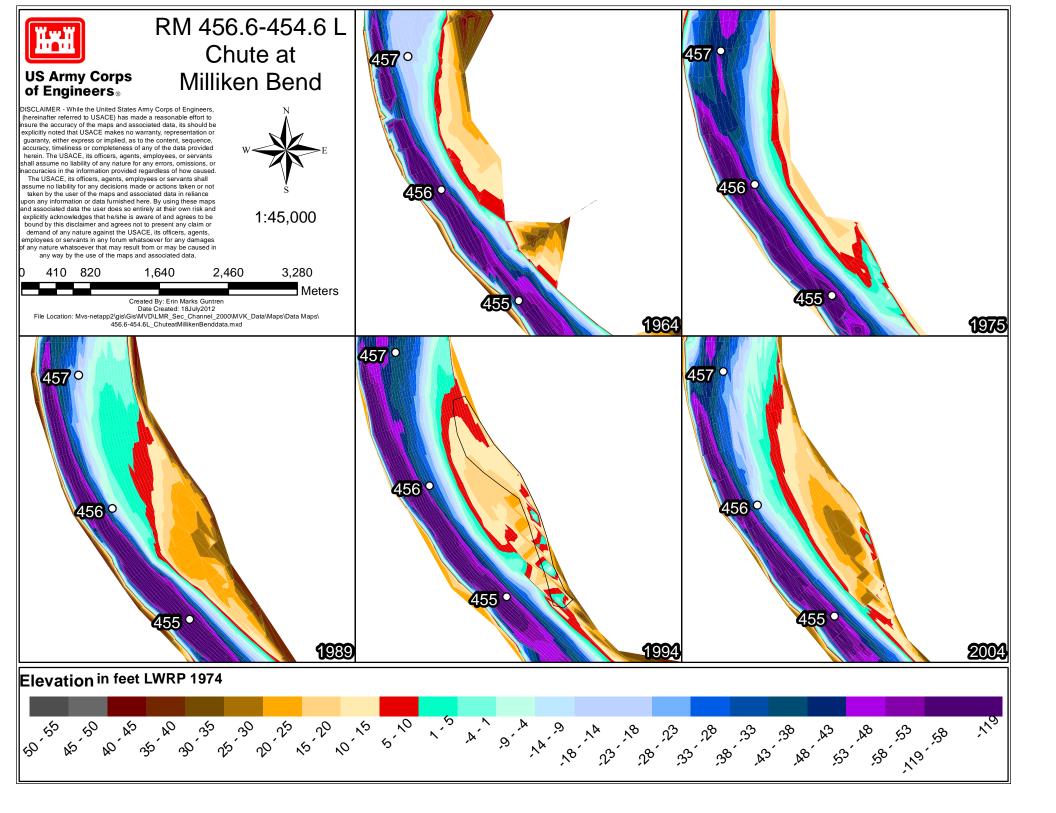


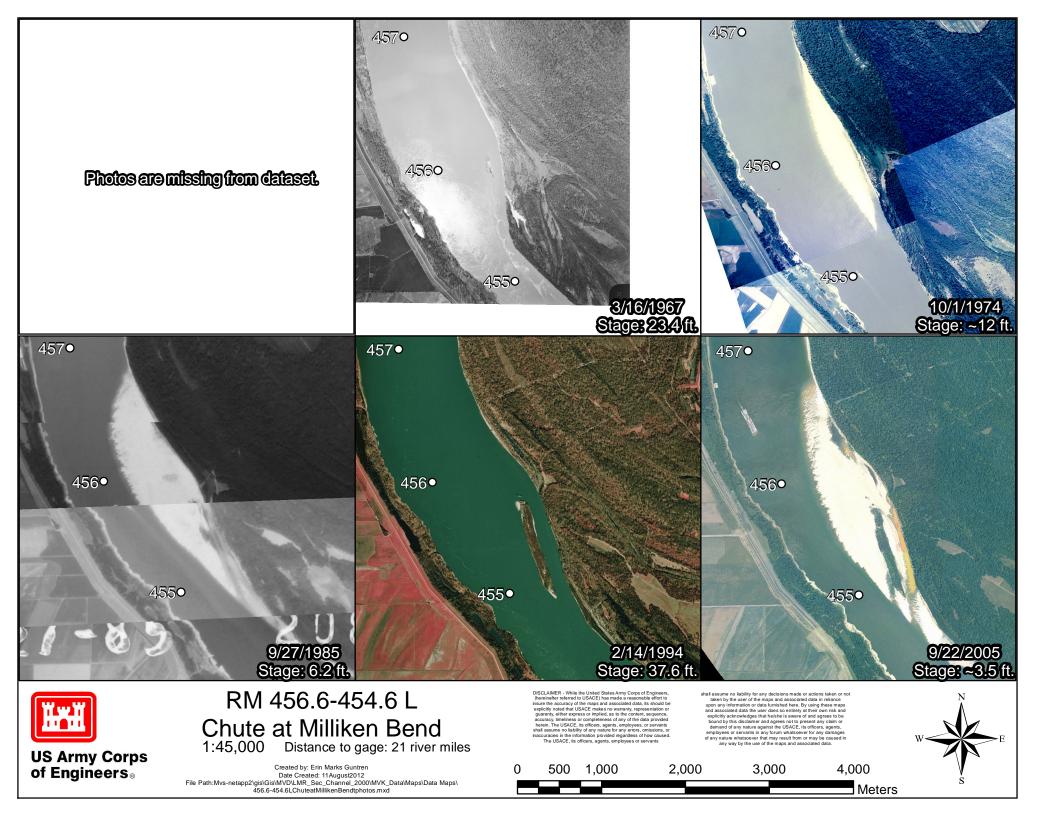
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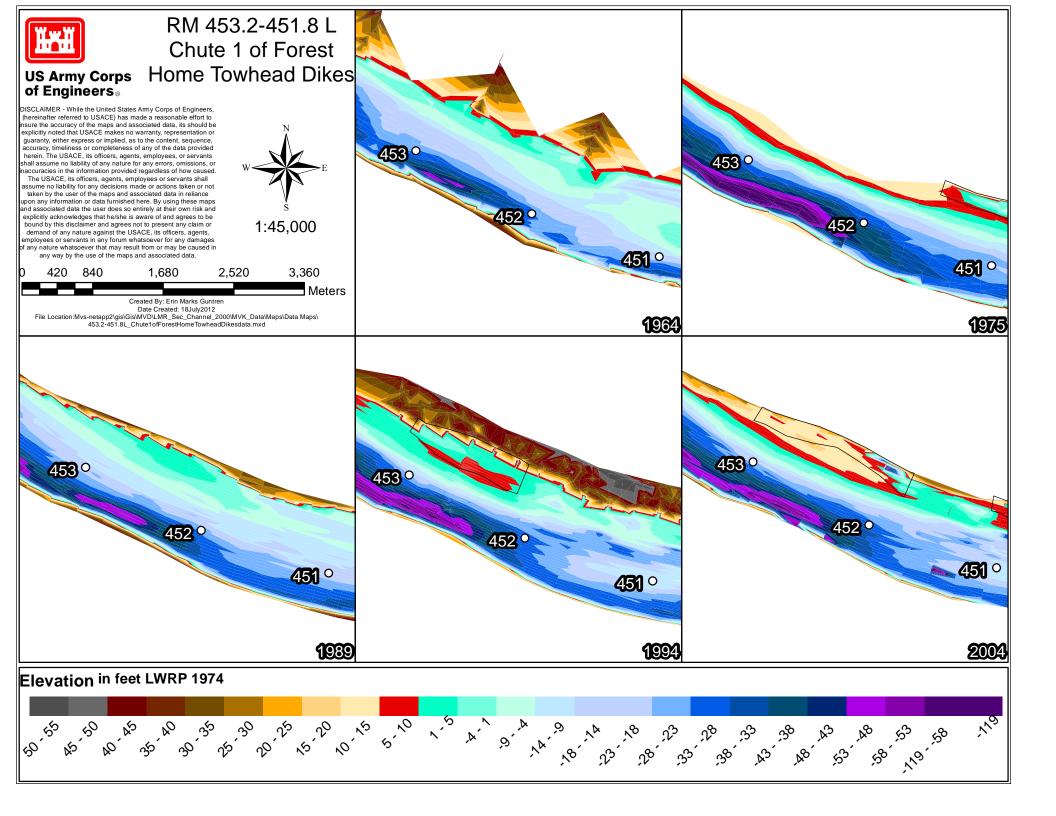
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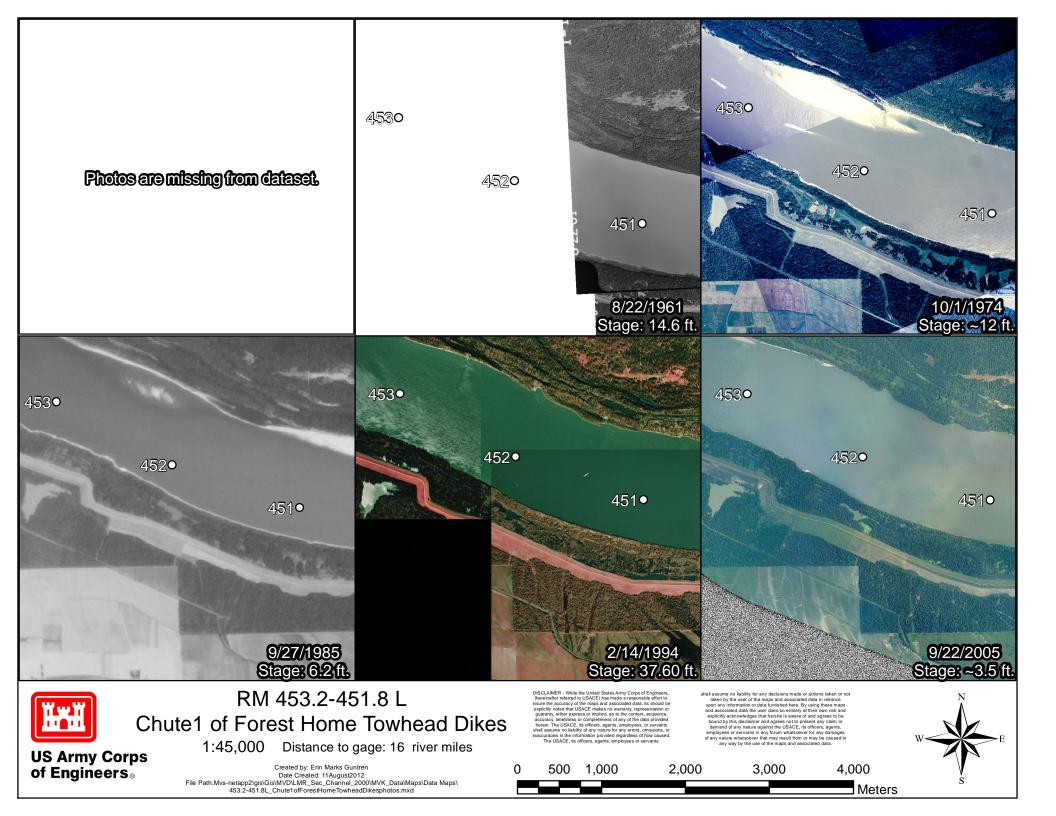


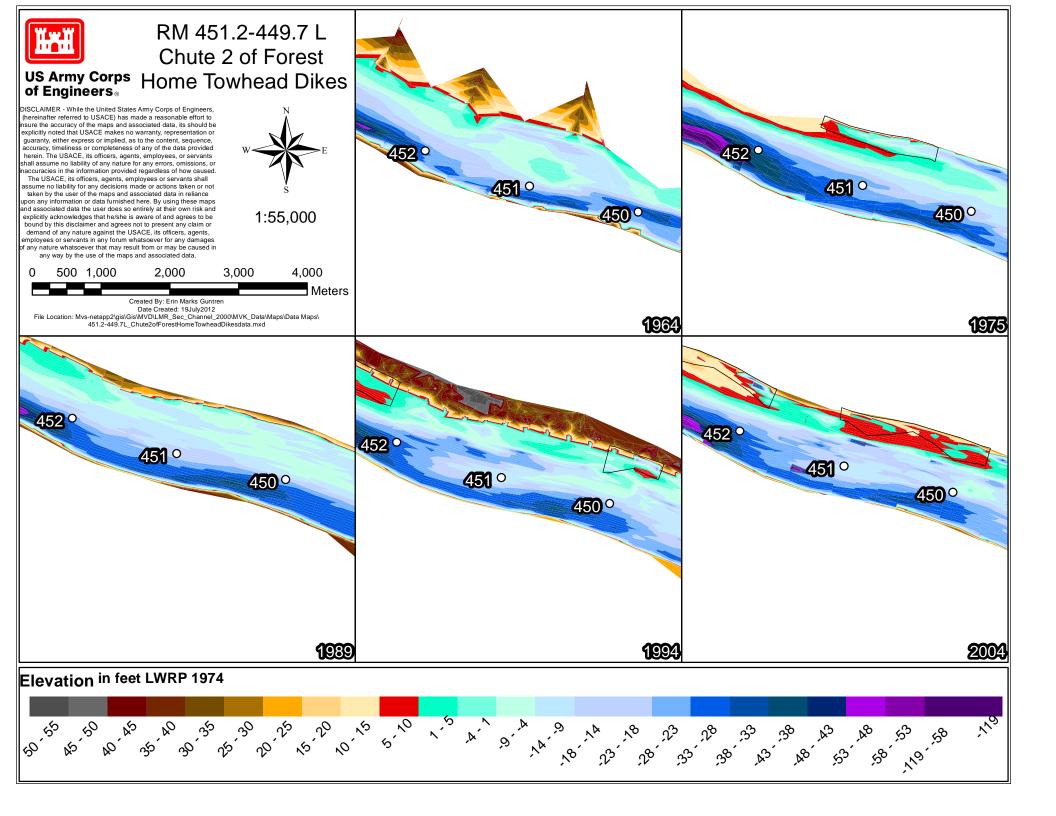


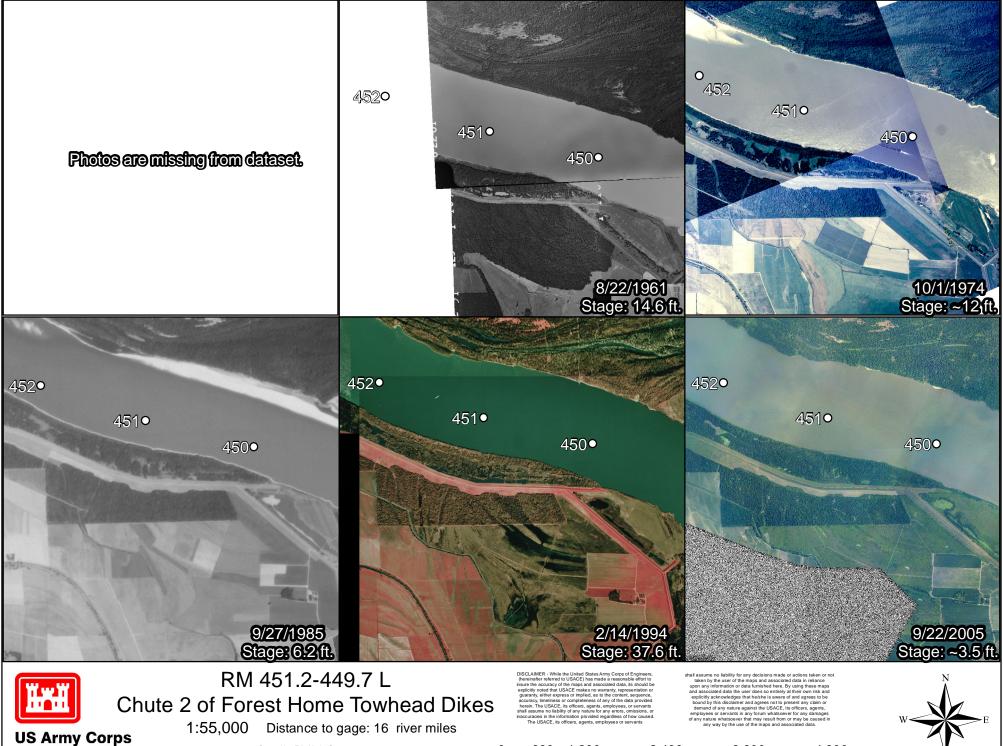












Created by: Erin Marks Guntren Date Created: 11 August2012

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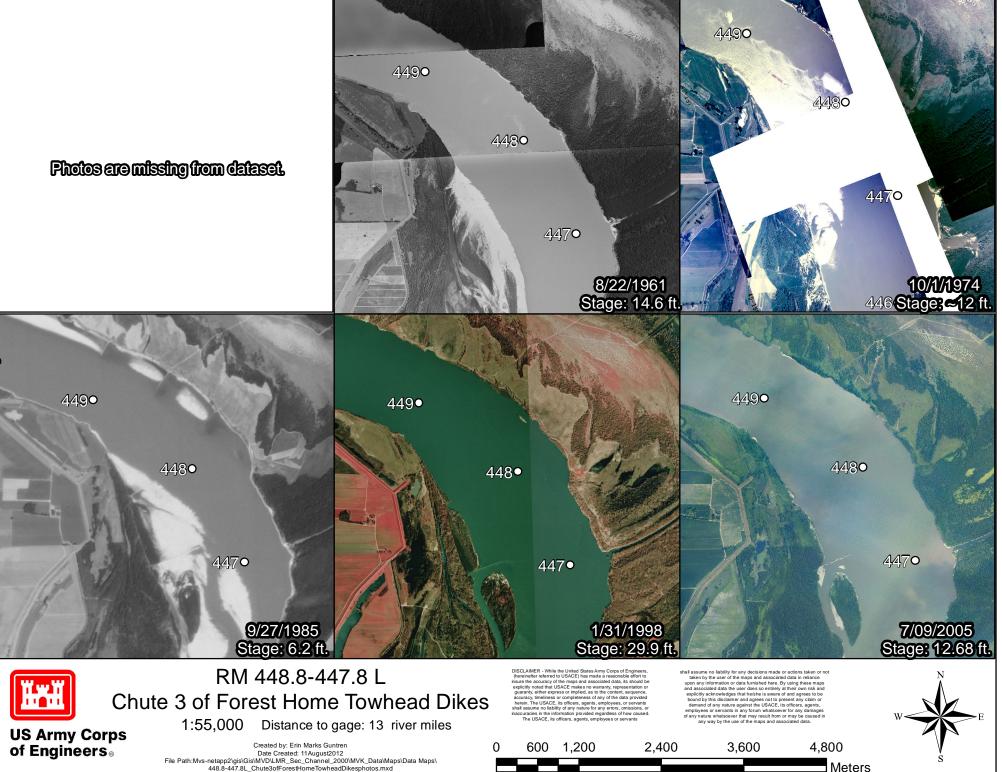
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2,400 3,600 4,800

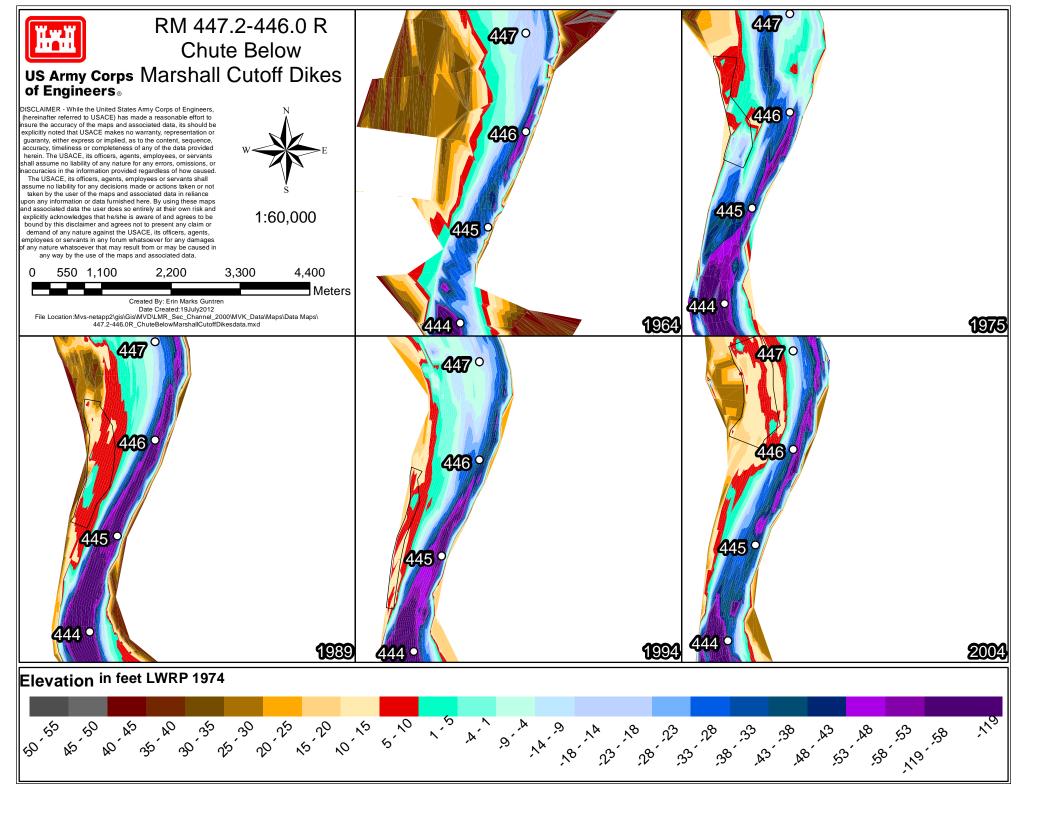
Meters

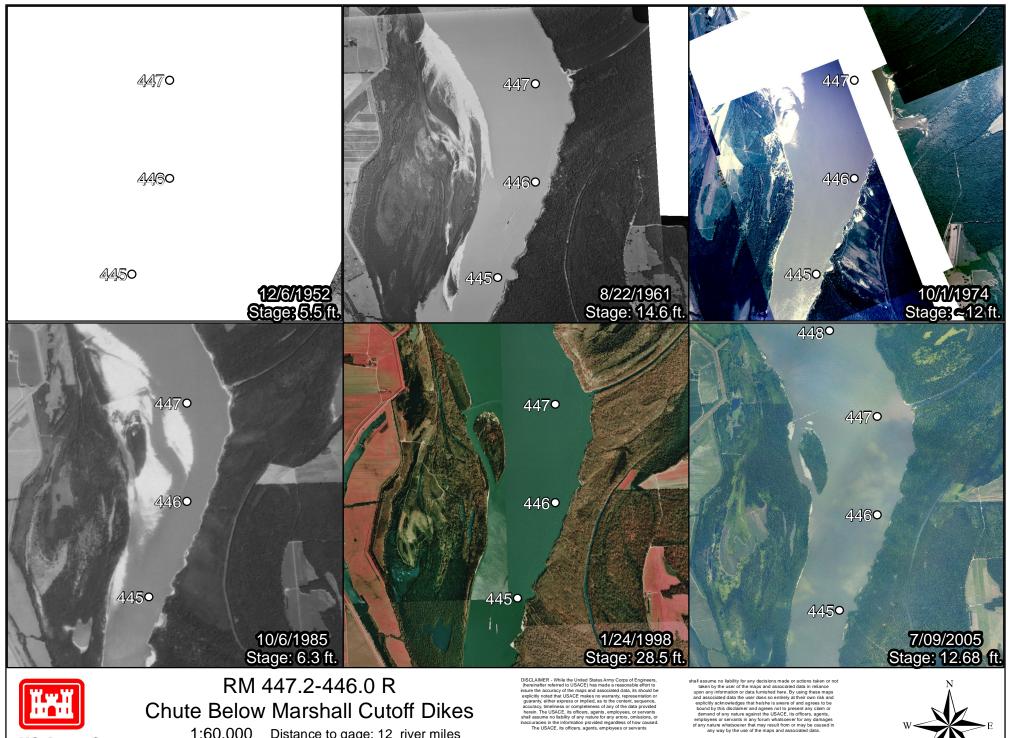
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451.2-449.7L_Chute2ofForestHomeTowheadDikesphotos.mxd

RM 448.8-447.8 L Chute 3 of Forest us Army Corps Home Towhead Dikes of Engineers® 4490 DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. 448 The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 4470 500 1,000 2,000 3,000 4,000 447° Meters Created By: Erin Marks Guntre Date Created: 19July2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 1964 1975 448.8-447.8L Chute3ofForestHomeTowheadDikesdata.mxd 4490 4490 4490 4480 4480 448 4470 4470 1989 1994 2004 Elevation in feet LWRP 1974



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US Army Corps of Engineers_®

1:60,000 Distance to gage: 12 river miles

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1,300

3,900

2,600

5,200

MRG&P Report No. 8

Appendix K: Reach K – River Miles 444-395 Vicksburg District

Fourteen secondary channels were identified in Reach K (see below). Only eight secondary channels were surveyed in all four decades and are thus included in the Reach Summary.

Table K1. Secondary channels and their upstream river mile for Reach K; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile Name		River Mile
Chute of False Point Dikes	440.6R	Chute of Newton Bend Dikes	421.0R	Chute at Hardscrabble Bend	399.7R
Chute 1 of Racetrack Towhead Dikes	432.9R	Chute of Togo Island Dikes	415.9L	Chute of Below Grand Gulf Dikes	399.0L
Chute 2 Outside Racetrack Towhead Dikes	431.7R	Chute Opposite Togo Island Dikes	416.0R		
Chute of Below Racetrack Dikes	431.2L	Chute of Middle Ground Island	410.5R		
Chute Behind Davis Island	425.0R	Chute Opposite Coffee Point Dikes	403.5L		
Chute of Diamond Point Cutoff Dikes	423.1L	Chute of Coffee Point Dikes	403.3R		

Reach Summary

Table K2. Sum of Reach K area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.	Areas (acres)				Volume (yd³)		
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
1964	100%	430	770	990	1,210	11,489,000	27,549,000	
1975	99%	610	850	1,090	1,250	17,085,000	34,372,000	
1994	99%	430	630	1,020	1,580	12,574,000	29,554,000	
2000	99%	170	250	470	940	3,915,000	12,259,000	

Table K3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach K. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

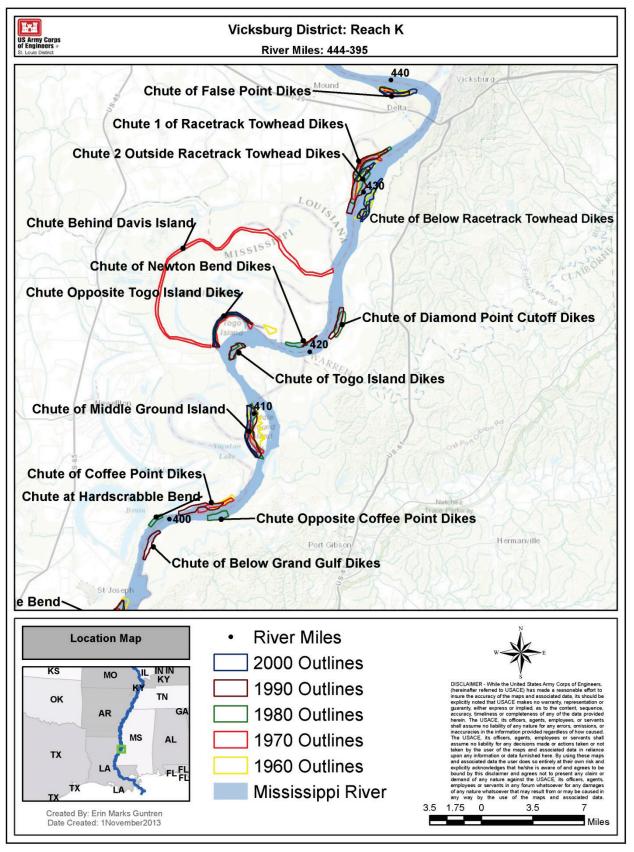
	River			and down		Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of False Point Dikes	440.6- 438.5R	1964	100%	80	120	160	180	1,464,000	3,999,000
Chute of False Point Dikes	440.6- 438.5R	1975	100%	100	120	140	160	2,196,000	4,465,000
Chute of False Point Dikes	440.6- 438.5R	1989	100%	130	160	190	240	3,232,000	6,349,000
Chute of False Point Dikes	440.6- 438.5R	1994	100%	110	130	150	190	3,289,000	5,773,000
Chute of False Point Dikes	440.6- 438.5R	2000	100%	110	150	190	230	2,505,000	5,590,000
Chute 1 of Racetrack Towhead Dikes	432.9- 430.7R	1964	100%	200	270	360	480	6,941,000	12,838,000
Chute 1 of Racetrack Towhead Dikes	432.9- 430.7R	1975	100%	190	260	340	390	4,072,000	9,406,000
Chute 1 of Racetrack Towhead Dikes	432.9- 430.7R	1989	100%	0	20	90	200	54,000	1,644,000
Chute 1 of Racetrack Towhead Dikes	432.9- 430.7R	1994	100%	431.7R	431.7R	431.7R	431.7R	431.7R	431.7R
Chute 1 of Racetrack Towhead Dikes	432.9- 430.7R	2000	100%	0	0	0	0	0	0
Chute 2 Outside Racetrack Towhead Dikes	431.7- 430.3R	1964	100%	0	0	0	0	0	0
Chute 2 Outside Racetrack Towhead Dikes	431.7- 430.3R	1975	100%	0	0	0	0	0	0
Chute 2 Outside Racetrack Towhead Dikes	431.7- 430.3R	1989	100%	170	240	310	370	3,024,000	7,980,000
Chute 2 Outside Racetrack Towhead Dikes	431.7- 430.3R	1994	100%	250	320	460	710	7,742,000	15,515,000
Chute 2 Outside Racetrack Towhead Dikes	431.7- 430.3R	2000	100%	10	20	60	130	249,000	1,321,000

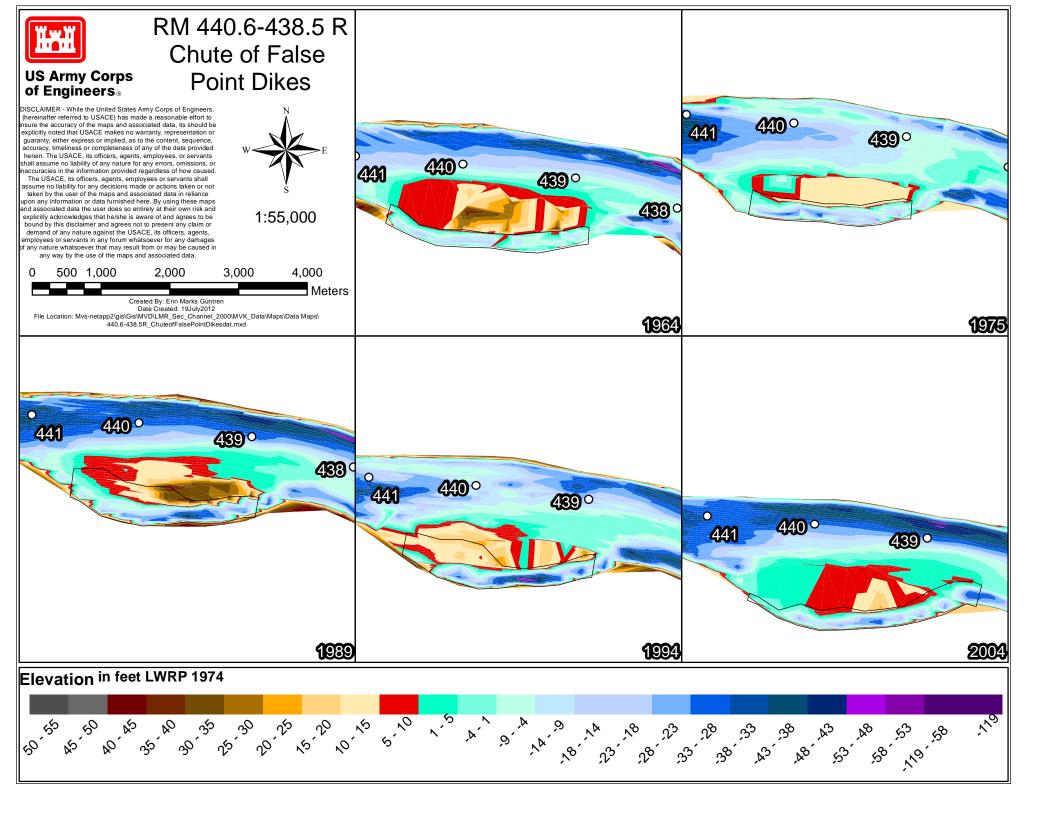
Cocondon/Chonnol	River	Year	C) met		Area (Volume (yd³)			
Secondary Channel	Miles		Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Below Racetrack Dikes	431.2- 428.2L	1964	100%	0	0	10	30	4,000	172,000
Chute of Below Racetrack Dikes	431.2- 428.2L	1975	100%	0	0	0	0	0	0
Chute of Below Racetrack Dikes	431.2- 428.2L	1989	80%	0	0	10	30	0	163,000
Chute of Below Racetrack Dikes	431.2- 428.2L	1994	100%	10	30	70	110	376,000	1,536,000
Chute of Below Racetrack Dikes	431.2- 428.2L	2000	100%	30	50	110	300	677,000	2,801,000
Chute Behind Davis Island	425- 414R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Behind Davis Island	425- 414R	1975	100%	50	130	260	580	1,146,000	5,862,000
Chute Behind Davis Island	425- 414R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Behind Davis Island	425- 414R	1994	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Behind Davis Island	425- 414R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Diamond Point Cutoff Dikes	423.1- 421.4L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Diamond Point Cutoff Dikes	423.1- 421.4L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Diamond Point Cutoff Dikes	423.1- 421.4L	1989	100%	0	10	40	90	11,000	654,000
Chute of Diamond Point Cutoff Dikes	423.1- 421.4L	1994	100%	0	40	160	280	115,000	2,710,000
Chute of Diamond Point Cutoff Dikes	423.1- 421.4L	2000	100%	0	0	0	0	0	0
Chute of Newton Bend Dikes	421- 419.7R	1964	100%	0	0	10	20	0	136,000
Chute of Newton Bend Dikes	421- 419.7R	1975	100%	0	0	0	0	0	0
Chute of Newton Bend Dikes	421- 419.7R	1989	100%	0	0	10	110	0	475,000
Chute of Newton Bend Dikes	421- 419.7R	1994	100%	0	0	0	10	0	19,000
Chute of Newton Bend Dikes	421- 419.7R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Togo Island Dikes	415.9- 413.4L	1964	100%	0	0	0	0	0	0

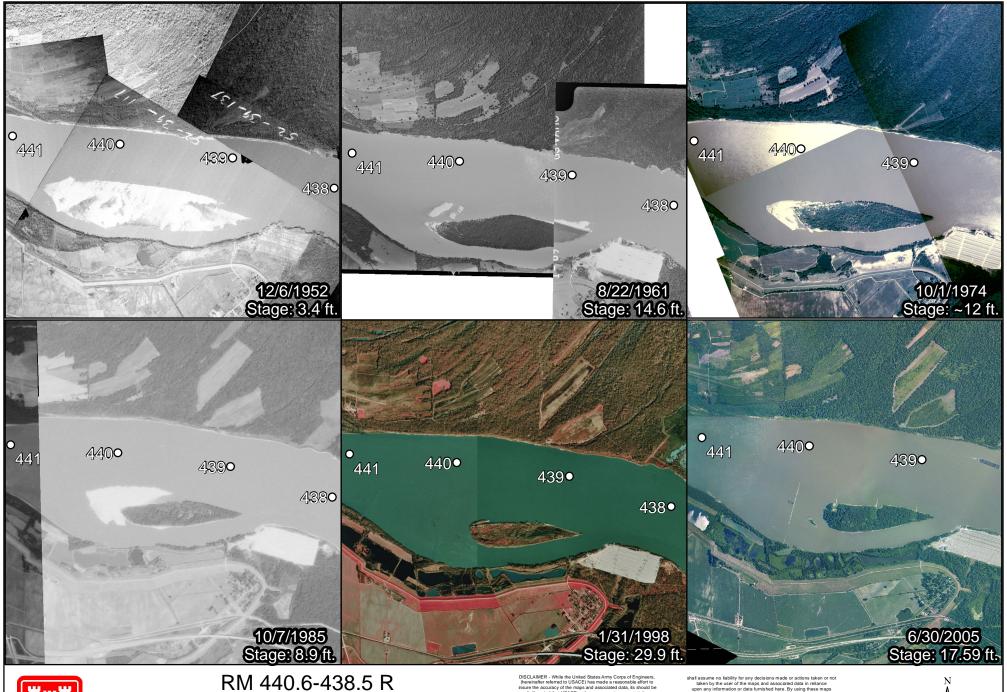
Cocondon: Obomol	acondany Channel River Year		Q		Area (Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Togo Island Dikes	415.9- 413.4L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Togo Island Dikes	415.9- 413.4L	1989	100%	10	20	50	130	203,000	1,083,000
Chute of Togo Island Dikes	415.9- 413.4L	1994	100%	10	20	50	140	297,000	1,274,000
Chute of Togo Island Dikes	415.9- 413.4L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Opposite Togo Island Dikes	416- 414.2R	1964	100%	0	0	0	0	0	0
Chute Opposite Togo Island Dikes	416- 414.2R	1975	100%	250	310	390	440	9,116,000	15,293,000
Chute Opposite Togo Island Dikes	416- 414.2R	1989	100%	40	70	110	170	851,000	2,676,000
Chute Opposite Togo Island Dikes	416- 414.2R	1994	90%	30	60	110	170	659,000	2,488,000
Chute Opposite Togo Island Dikes	416- 414.2R	2000	90%	10	20	50	110	194,000	1,054,000
Chute of Middle Ground Island	410.5- 407.2R	1964	100%	140	380	470	520	3,081,000	10,539,000
Chute of Middle Ground Island	410.5- 407.2R	1975	90%	70	160	220	260	1,700,000	5,208,000
Chute of Middle Ground Island	410.5- 407.2R	1989	100%	20	80	220	430	427,000	4,264,000
Chute of Middle Ground Island	410.5- 407.2R	1994	100%	20	80	220	400	508,000	4,241,000
Chute of Middle Ground Island	410.5- 407.2R	2000	100%	10	20	60	180	290,000	1,494,000
Chute Opposite Coffee Point Dikes	403.5- 402.3L	1964	100%	0	0	0	0	0	0
Chute Opposite Coffee Point Dikes	403.5- 402.3L	1975	100%	0	0	0	0	0	0
Chute Opposite Coffee Point Dikes	403.5- 402.3L	1989	100%	160	180	200	250	6,034,000	9,335,000
Chute Opposite Coffee Point Dikes	403.5- 402.3L	1994	100%	0	0	0	0	0	0
Chute Opposite Coffee Point Dikes	403.5- 402.3L	2000	100%	0	0	0	0	0	0
Chute of Coffee Point Dikes	403.3- 400.5R	1964	100%	0	0	20	120	0	582,000
Chute of Coffee Point Dikes	403.3- 400.5R	1975	100%	30	50	130	250	504,000	2,791,000

Secondary Channel	River	Year Cvrg.			Area (Acres)	Volume (yd ³)		
Secondary Charmer	Miles	Icai	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Coffee Point Dikes	403.3- 400.5R	1989	100%	0	0	0	0	0	0
Chute of Coffee Point Dikes	403.3- 400.5R	1994	100%	100	190	340	440	2,804,000	8,125,000
Chute of Coffee Point Dikes	403.3- 400.5R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Hardscrabble Bend	399.7- 398.9R	1964	100%	0	0	0	0	0	0
Chute at Hardscrabble Bend	399.7- 398.9R	1975	100%	0	0	0	0	0	0
Chute at Hardscrabble Bend	399.7- 398.9R	1989	100%	10	20	50	80	155,000	964,000
Chute at Hardscrabble Bend	399.7- 398.9R	1994	100%	0	0	0	0	0	0
Chute at Hardscrabble Bend	399.7- 398.9R	2000	100%	0	0	0	0	0	0
Chute of Below Grand Gulf Dikes	399- 397L	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Grand Gulf Dikes	399- 397L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Below Grand Gulf Dikes	399- 397L	1989	100%	0	0	0	0	0	0
Chute of Below Grand Gulf Dikes	399- 397L	1994	100%	0	10	40	140	16,000	890,000
Chute of Below Grand Gulf Dikes	399- 397L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Figure K1. Vicksburg District Reach K river miles 444-395.









RM 440.6-438.5 R Chute of False Point Dikes

1:55,000 Distance to gage: 5 river miles

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Date Created: 11August2012
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600 1,200 2,400

3,600

4,800

RM 432.9-430.7 R Chute 1 of Racetrack **Towhead Dikes US Army Corps** of Engineers® DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:75,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 700 1,400 2,800 4,200 5,600 Meters Created By: Erin Marks Guntrer

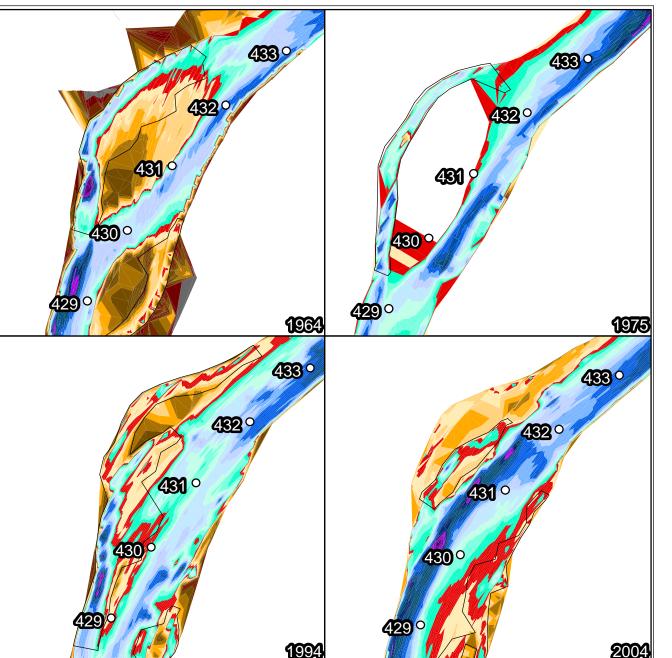
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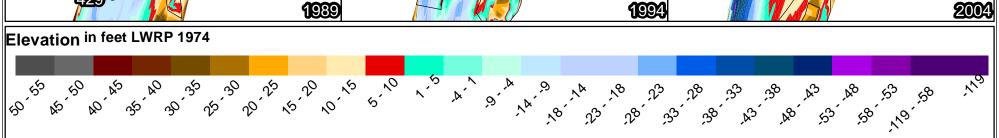
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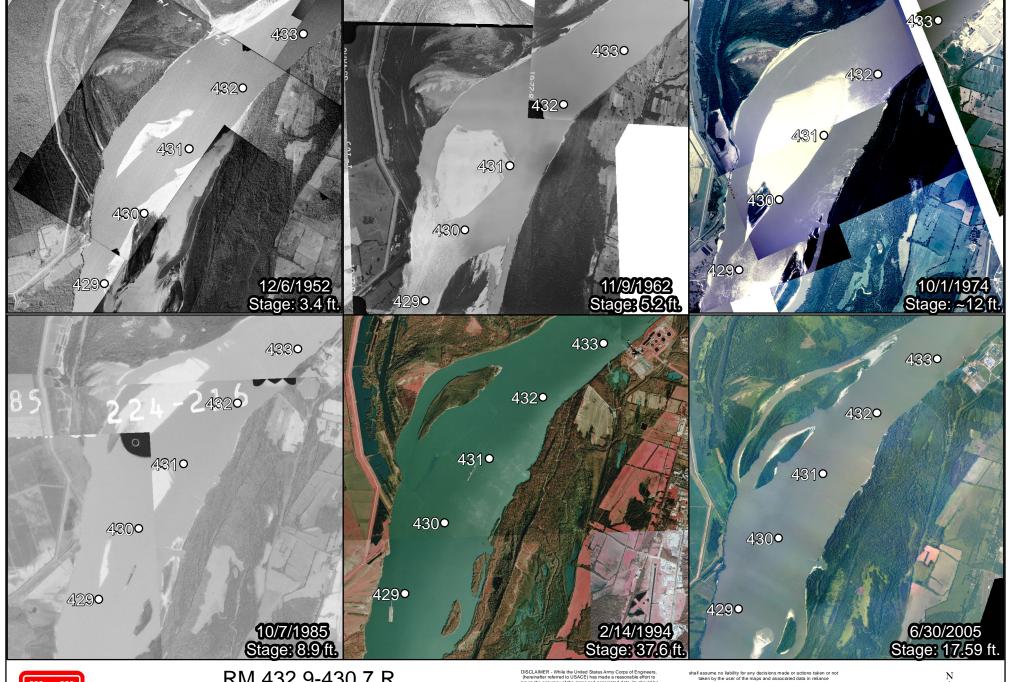
430

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4329









RM 432.9-430.7 R Chute 1 of Racetrack Towhead Dikes

1:75,000 Distance to gage: 2 river miles

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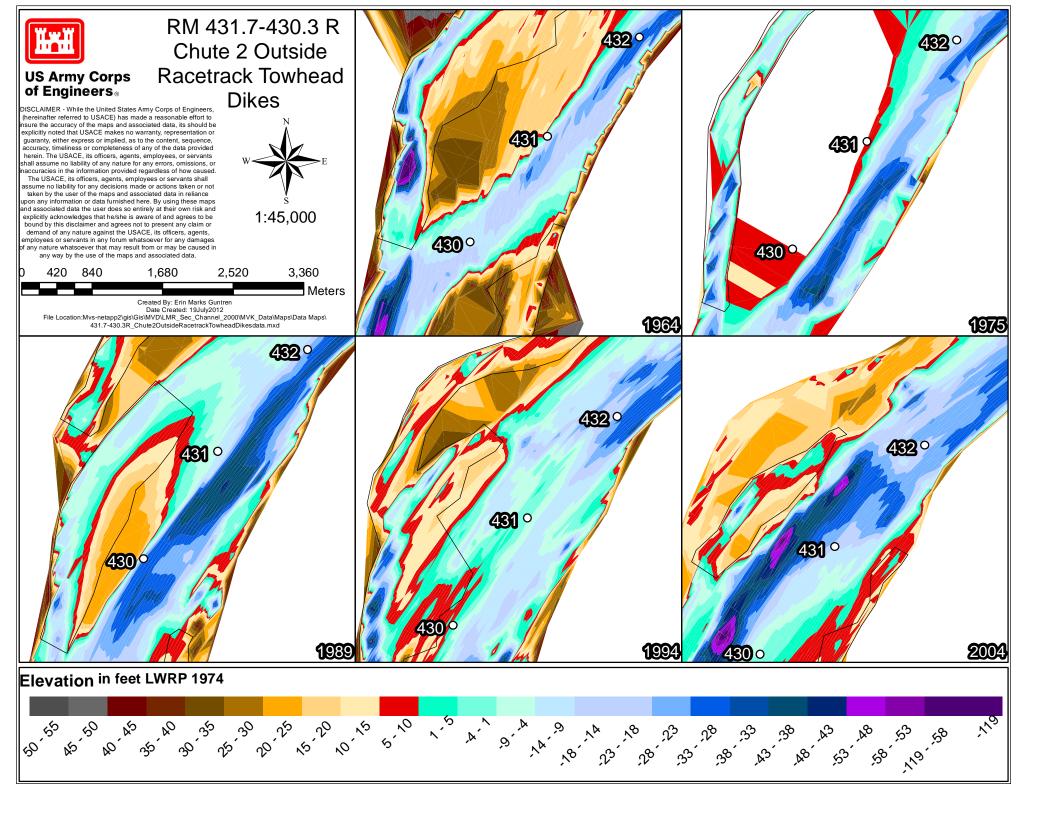


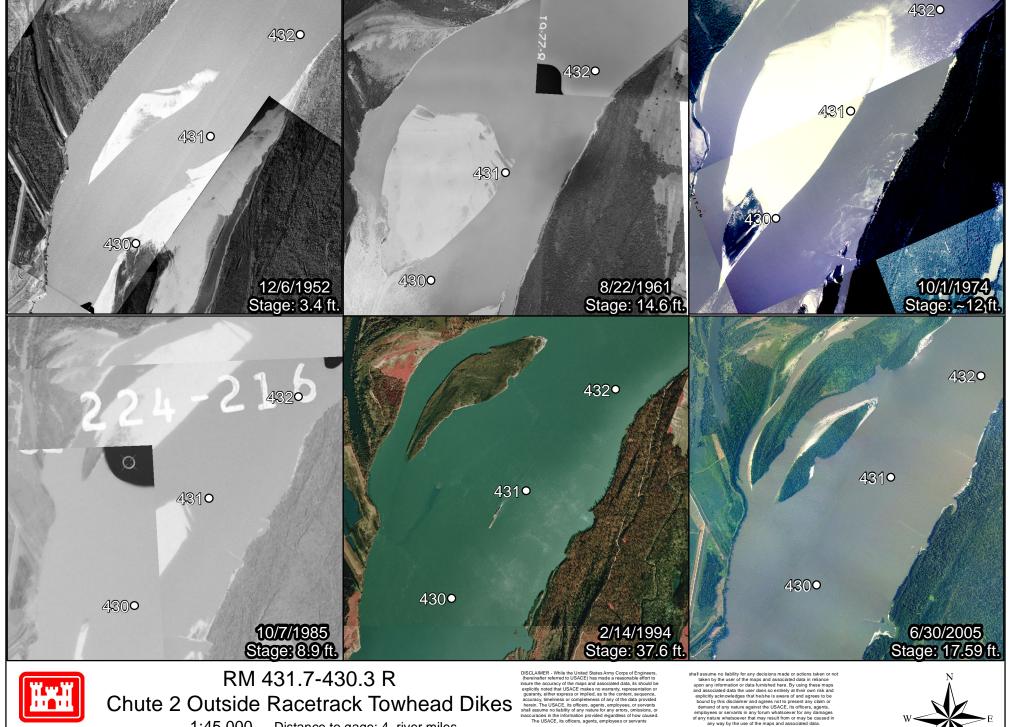
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4,800

3,200

6,400







1:45,000 Distance to gage: 4 river miles

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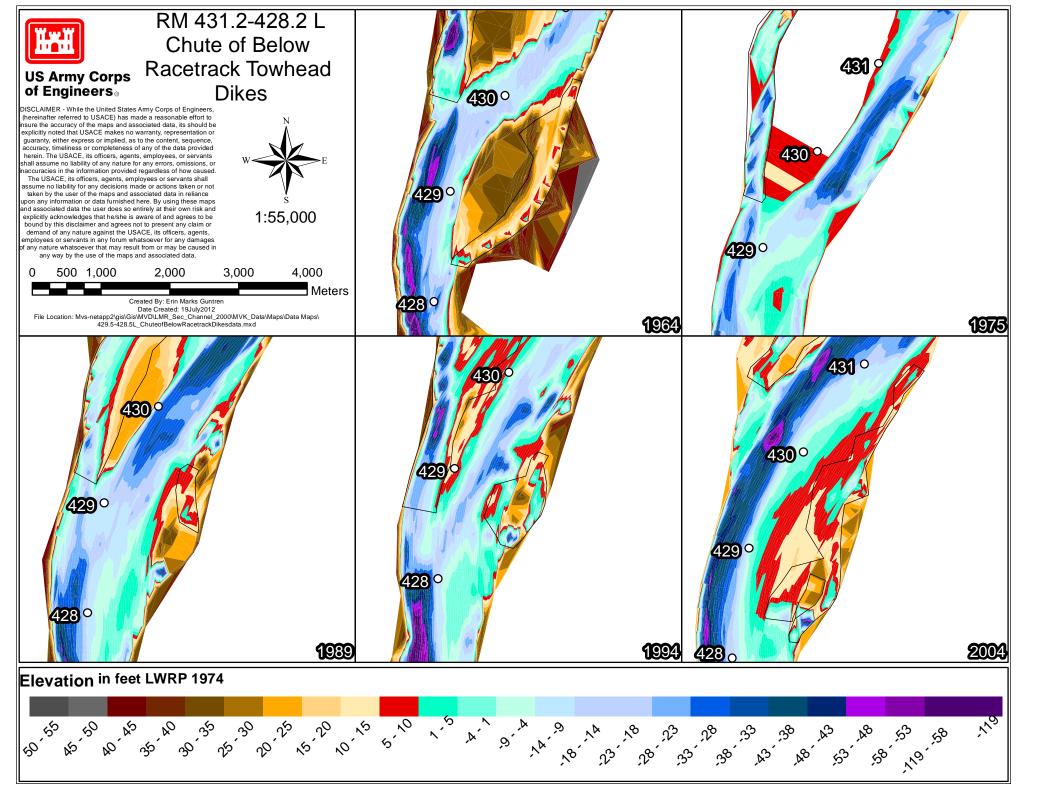


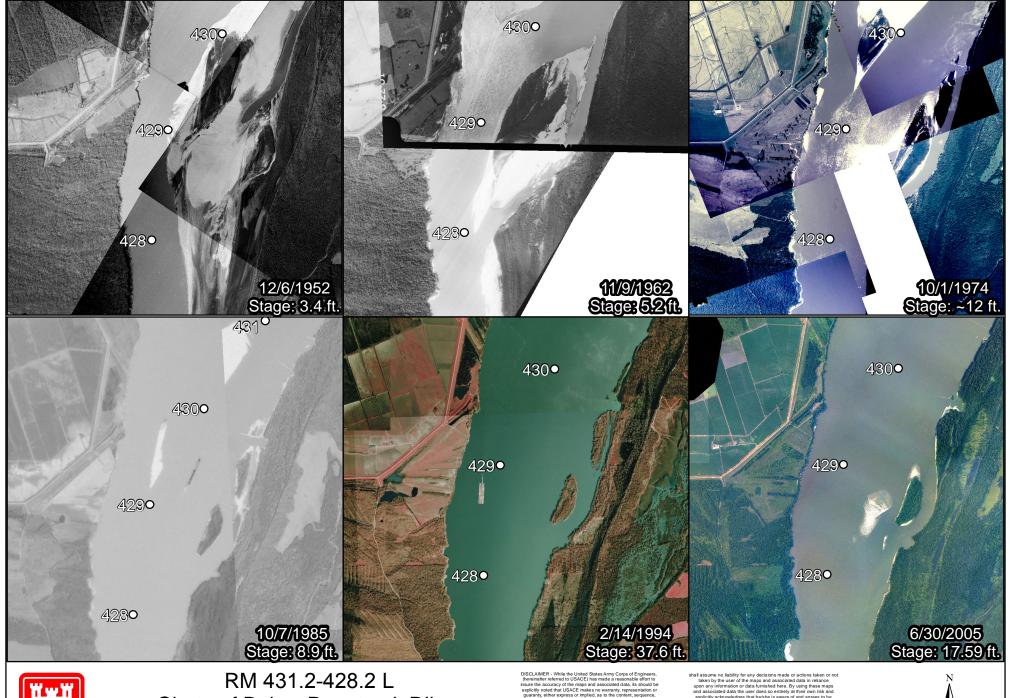
1,000

2,000

3,000

4,000







Chute of Below Racetrack Dikes

1:55,000 Distance to gage: 6 river miles

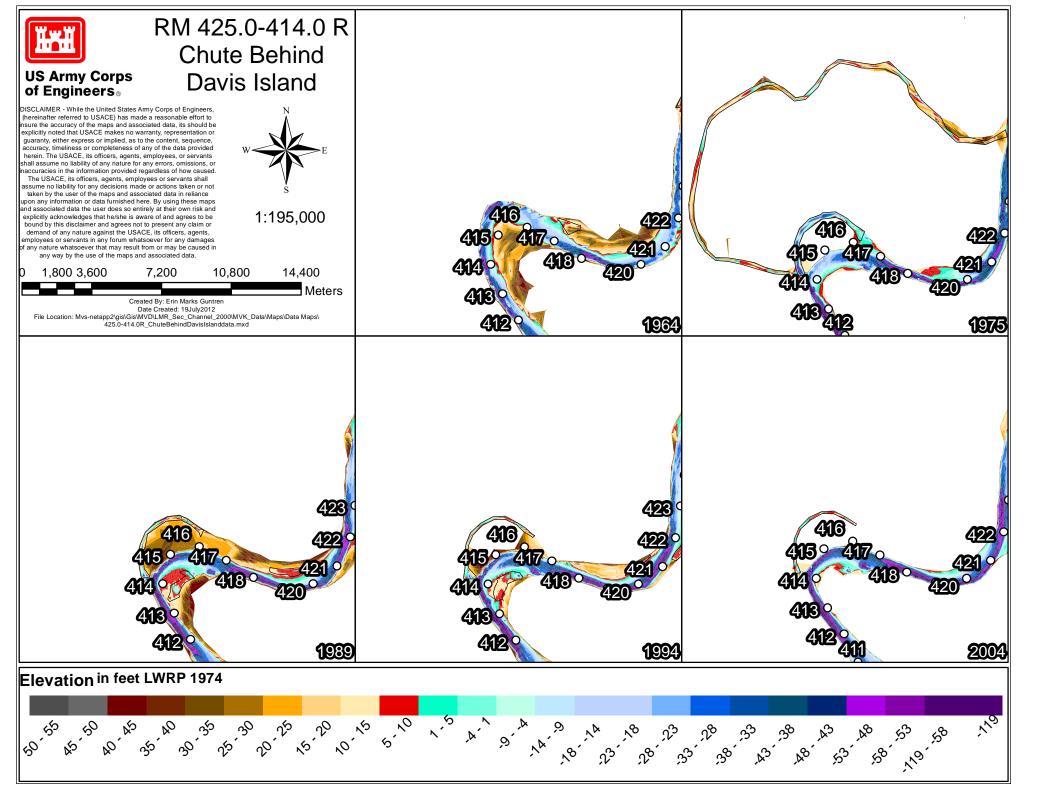
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429.5-428.5R_ChuteofBelowRacetrackDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

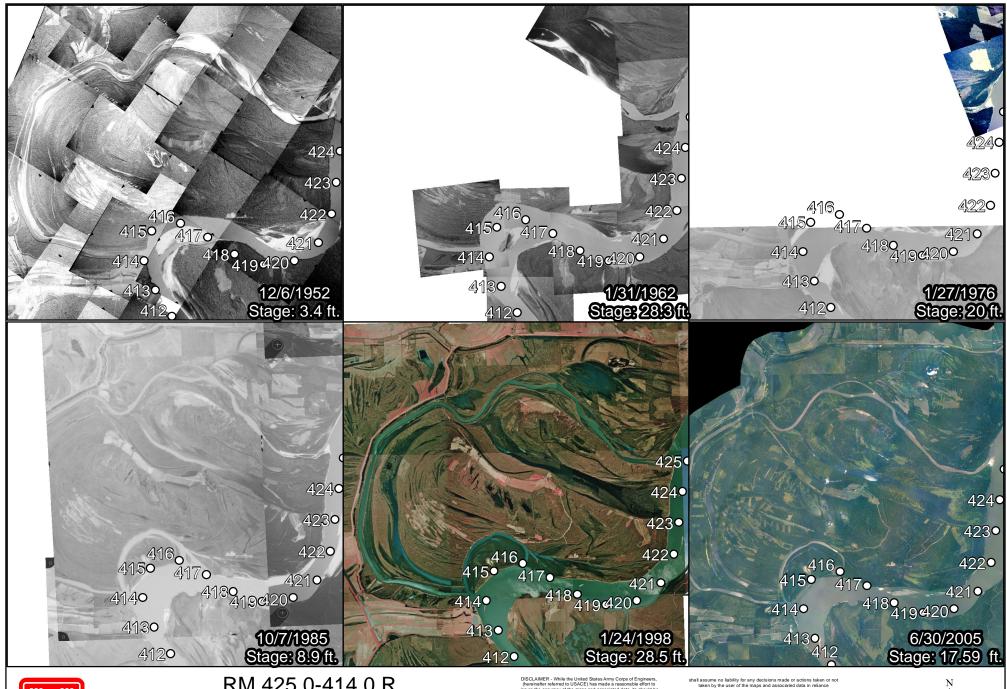
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1,200

2,400 3,600 4,800







RM 425.0-414.0 R Chute Behind Davis Island

1:195,000 Distance to gage: 10 river miles

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Date Created: 11August2012
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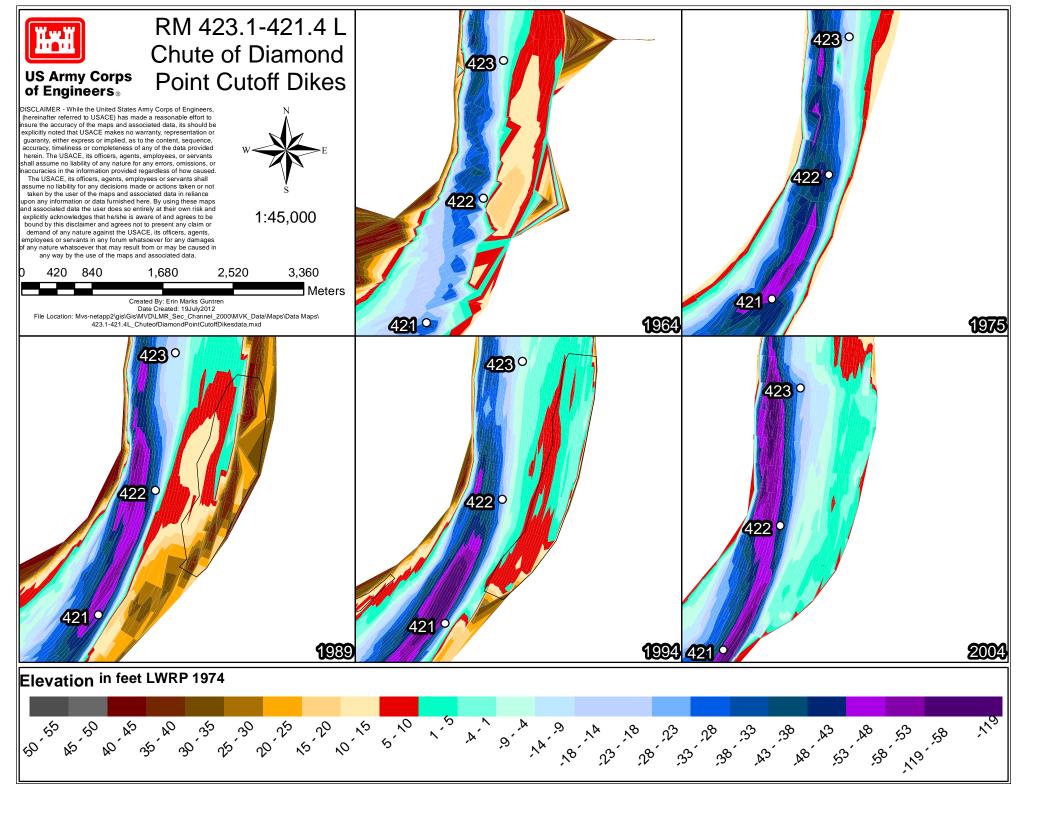
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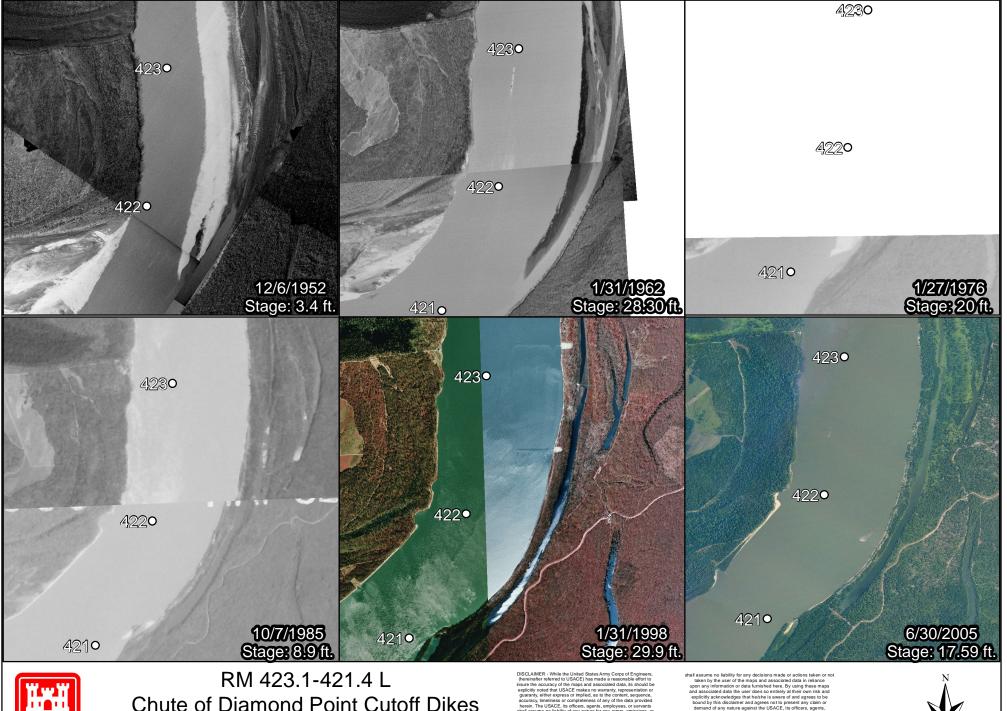


0 2,150 4,300

8,600 12,900

17,200





US Army Corps of Engineers_®

Chute of Diamond Point Cutoff Dikes

1:45,000 Distance to gage: 12 river miles

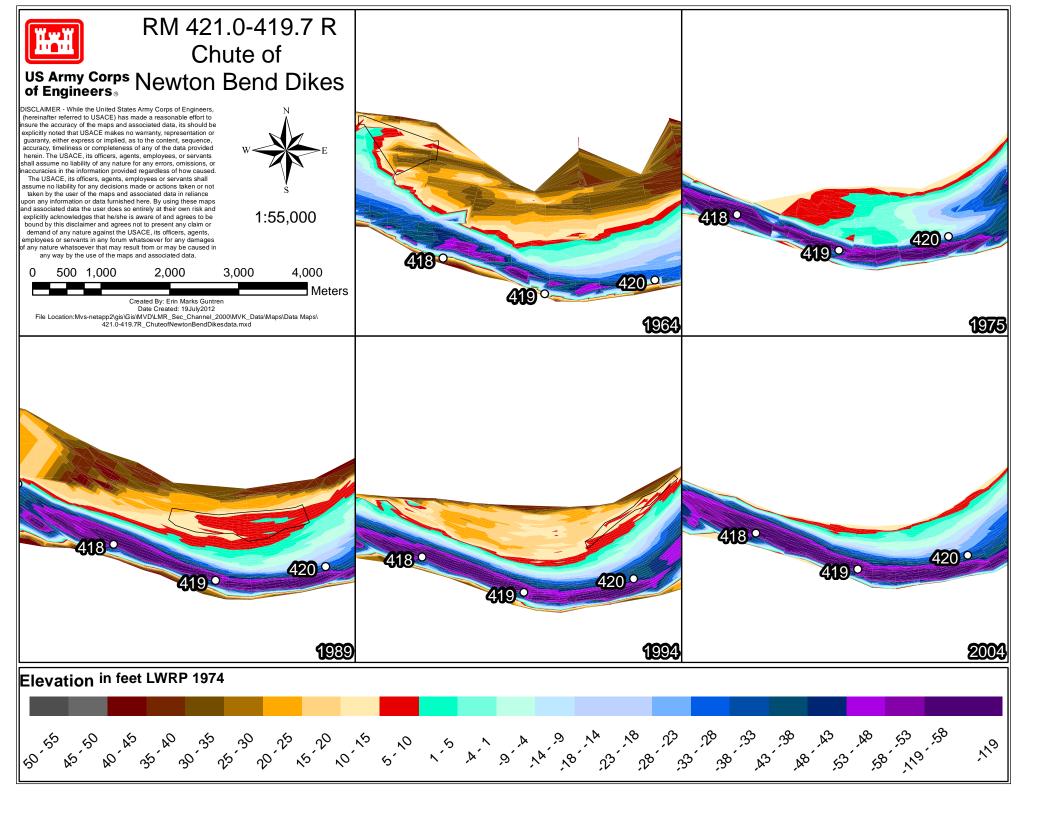
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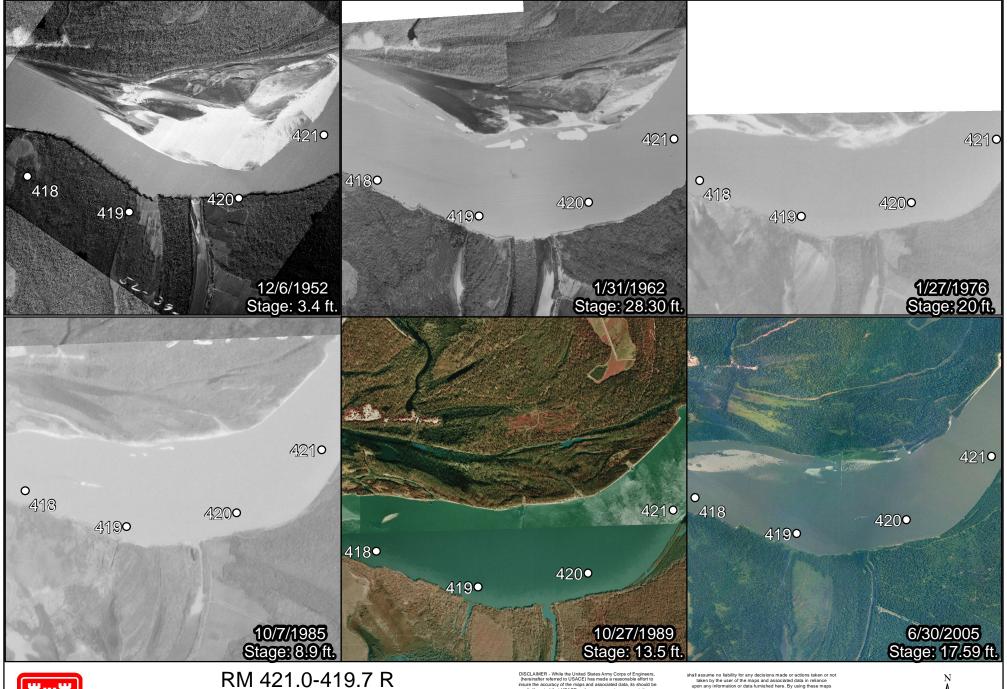
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1,000

2,000 3,000 4,000







RM 421.0-419.7 R Chute of Newton Bend Dikes

1:55,000 Distance to gage: 14 river miles

Created by: Erin Marks Guntren
Date Created: 11August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
421.0-419.7R_ChuteofNewtonBendDikesphotos.mxd

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0 600 1,200

3,600

2,400

4,800

RM 415.9-413.4 L Chute of Togo Island Dikes

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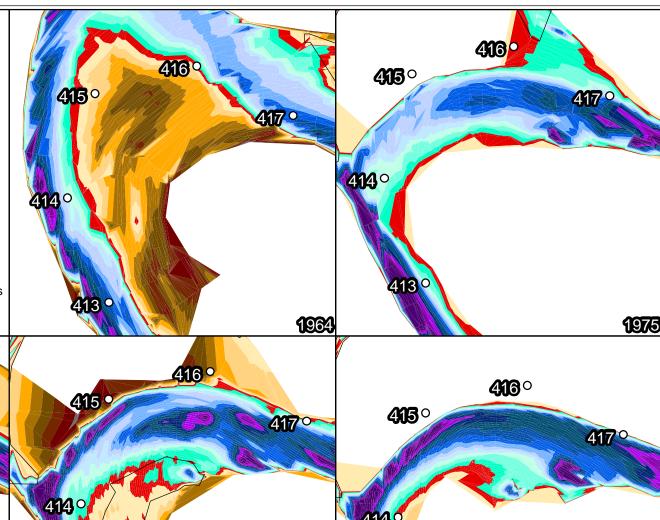
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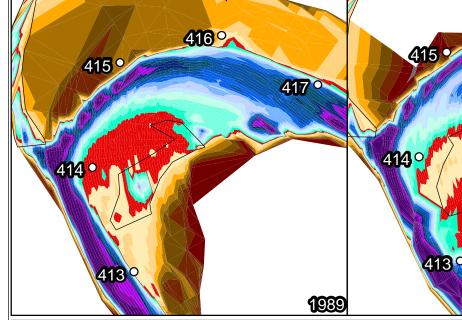


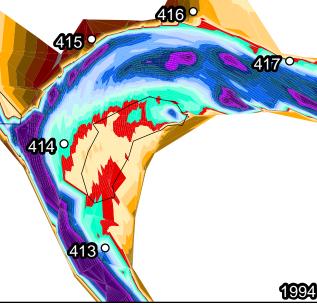
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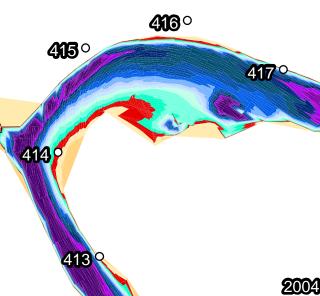


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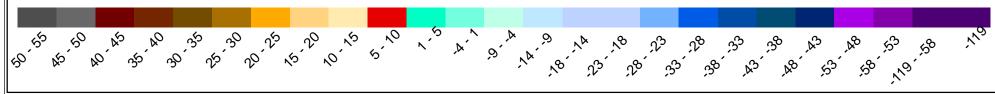


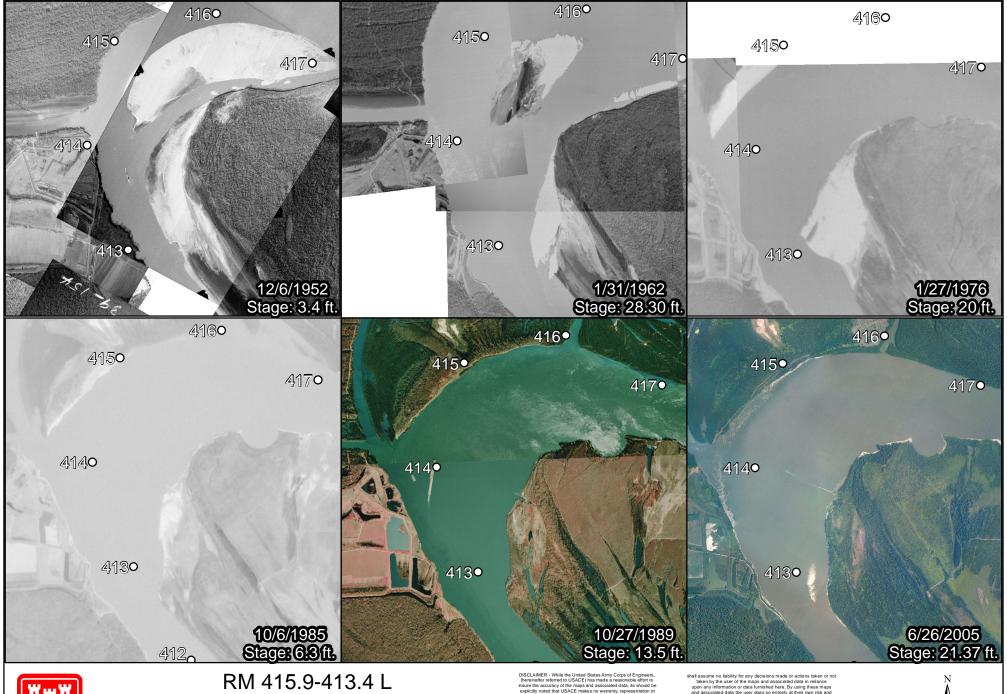






Elevation in feet LWRP 1974







RM 415.9-413.4 L Chute of Togo Island Dikes

1:55,000 Distance to gage: 19 river miles

Created by: Erin Marks Guntren
Date Created: 11 August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
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600 1,200

3,600

2,400

4,800

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RM 416.0-414.2 R **Chute Opposite** Togo Island Dikes

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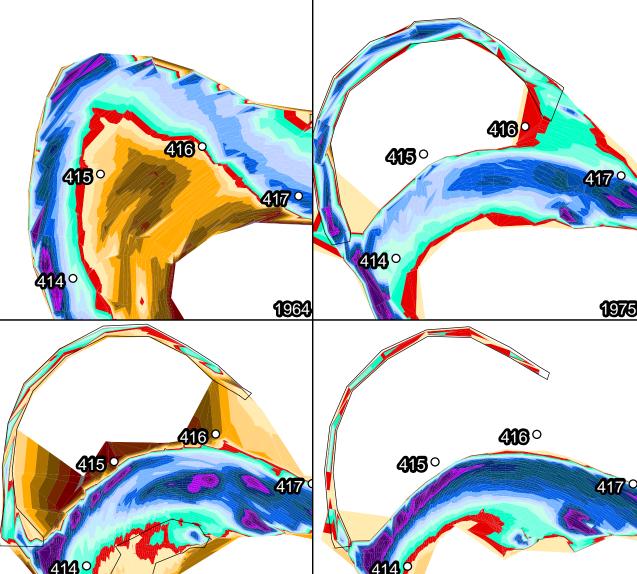


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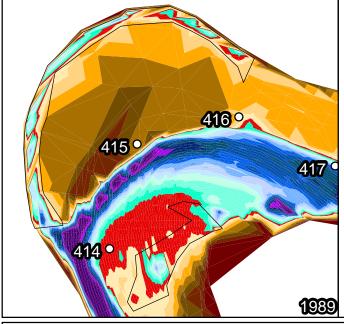


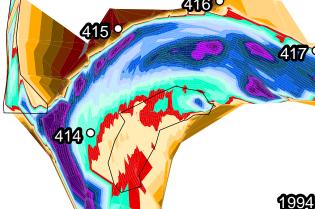
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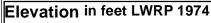
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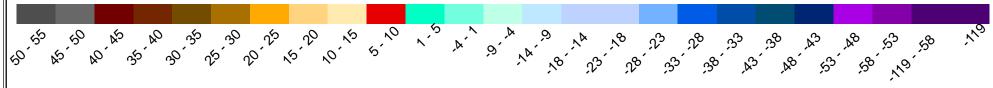


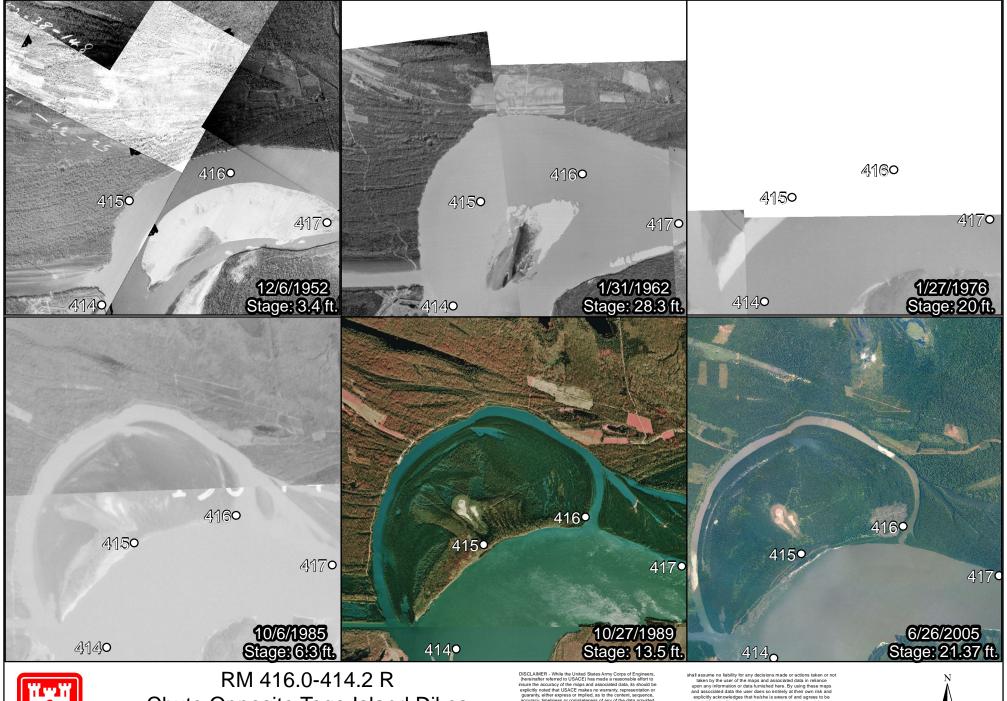
2004













Chute Opposite Togo Island Dikes

1:55,000 Distance to gage: 21 river miles

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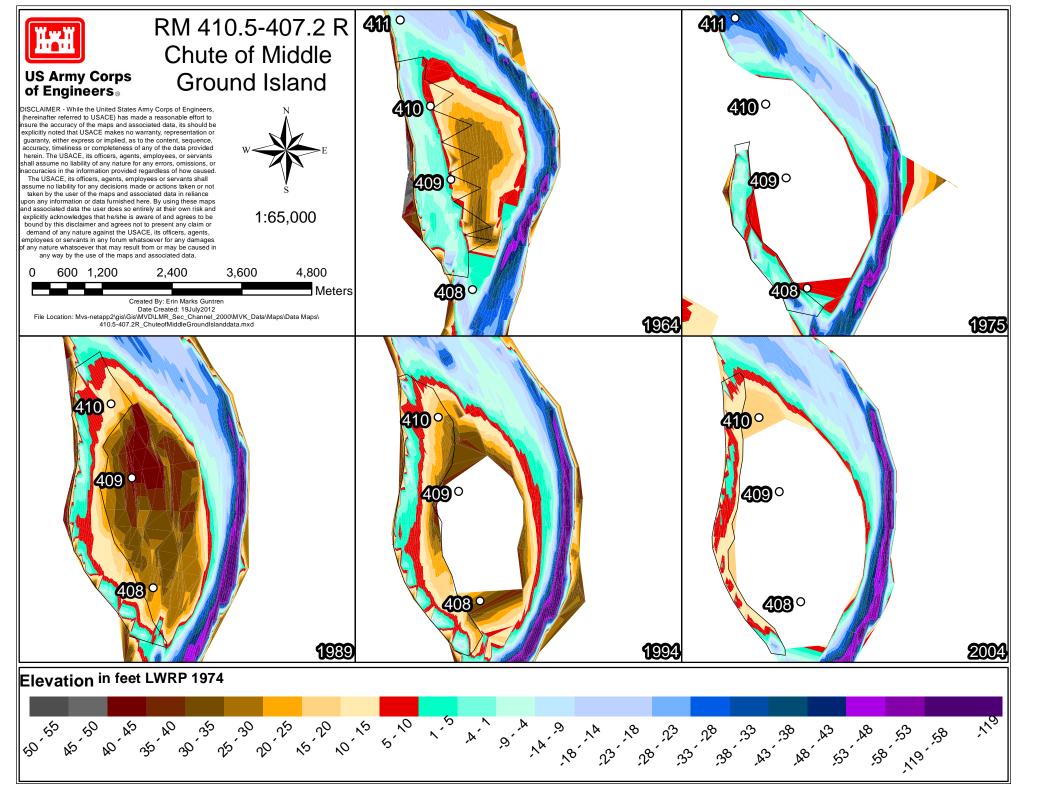
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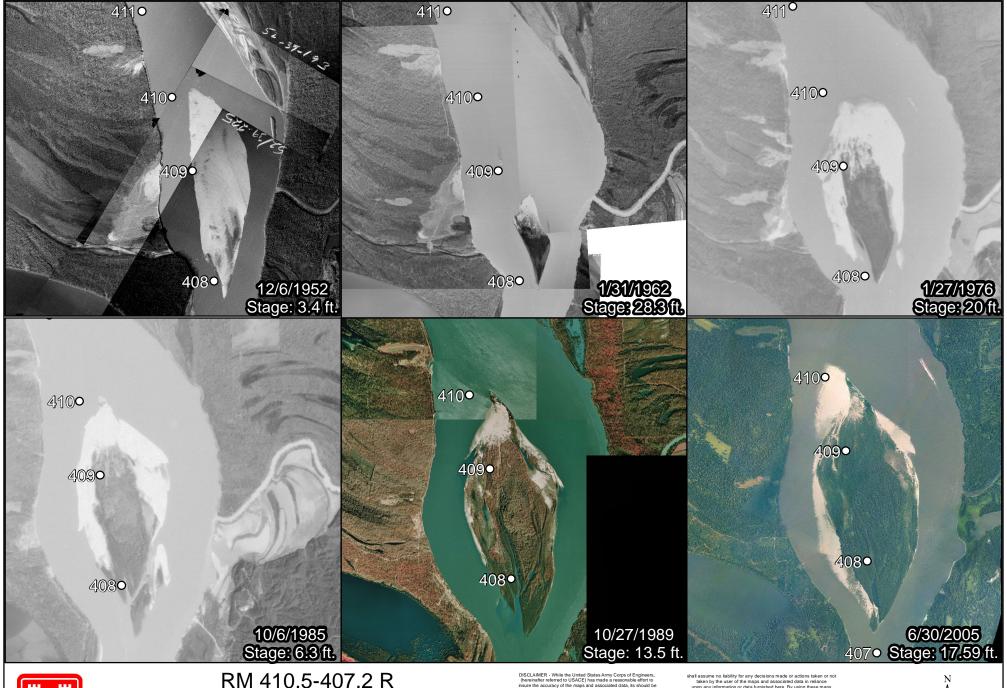
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1,200

2,400 3,600 4,800







RM 410.5-407.2 R Chute of Middle Ground Island

1:65,000 Distance to gage: 25 river miles

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Date Created: 11August2012
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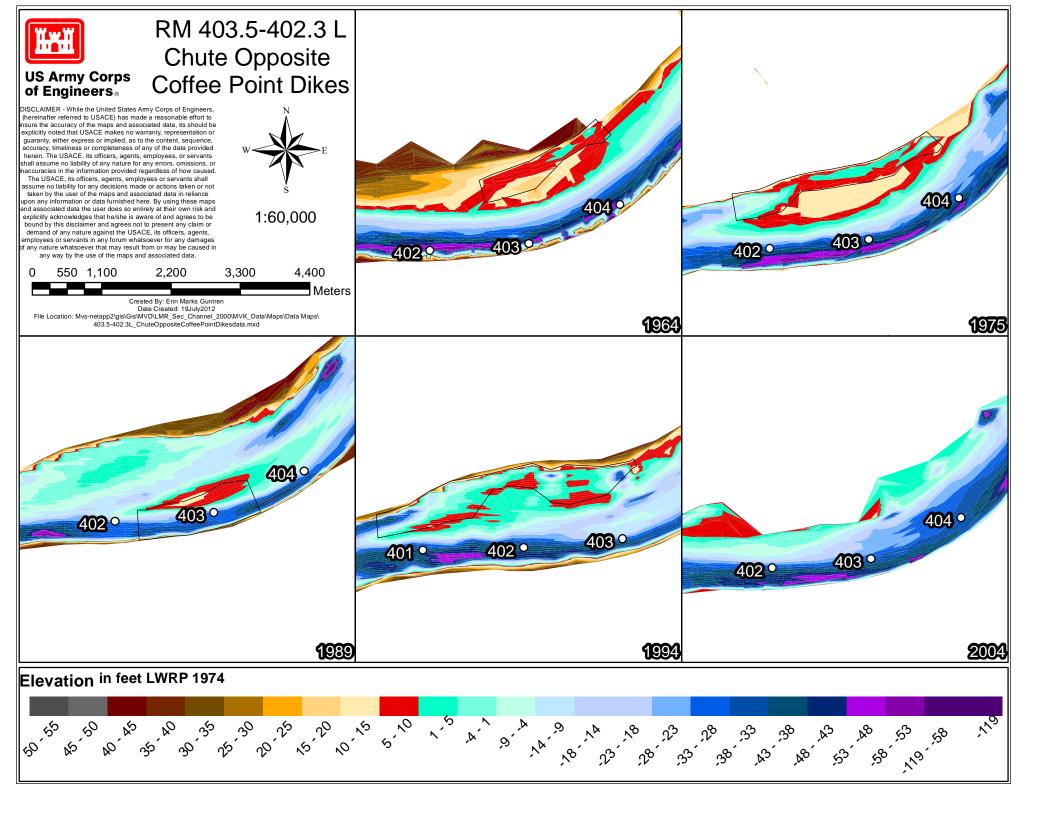


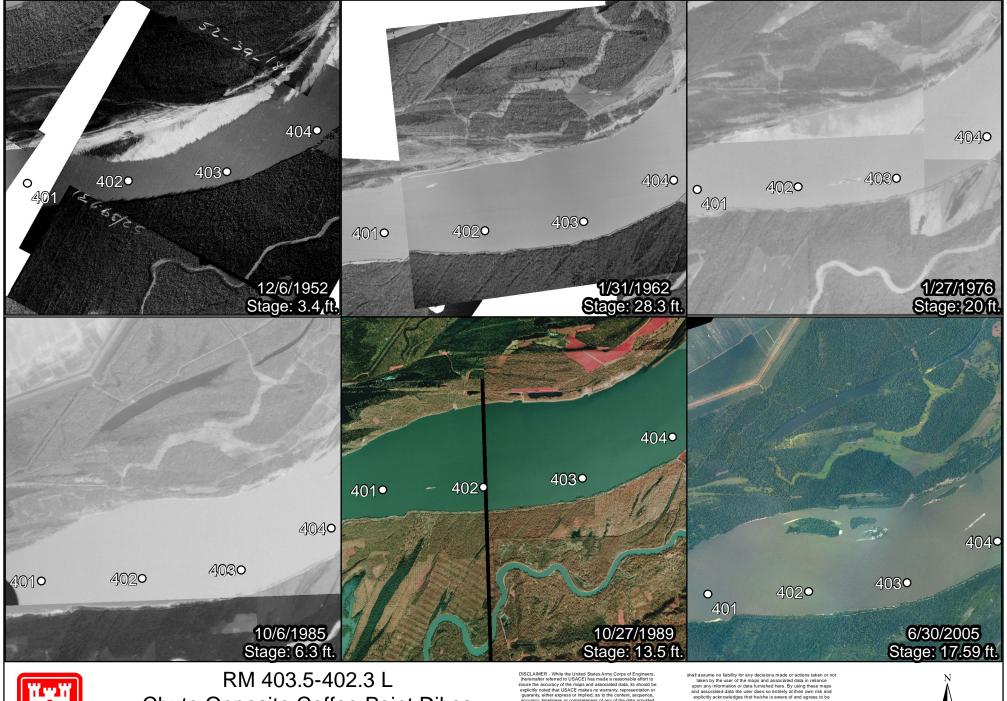
0 700 1,400

4,200

2,800

5,600





US Army Corps of Engineers®

Chute Opposite Coffee Point Dikes

1:60,000 Distance to gage: 32 river miles

Created by: Erin Marks Guntren

Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 403.5-402.3L_ChuteOppositeCoffeePointDikesphotos.mxd

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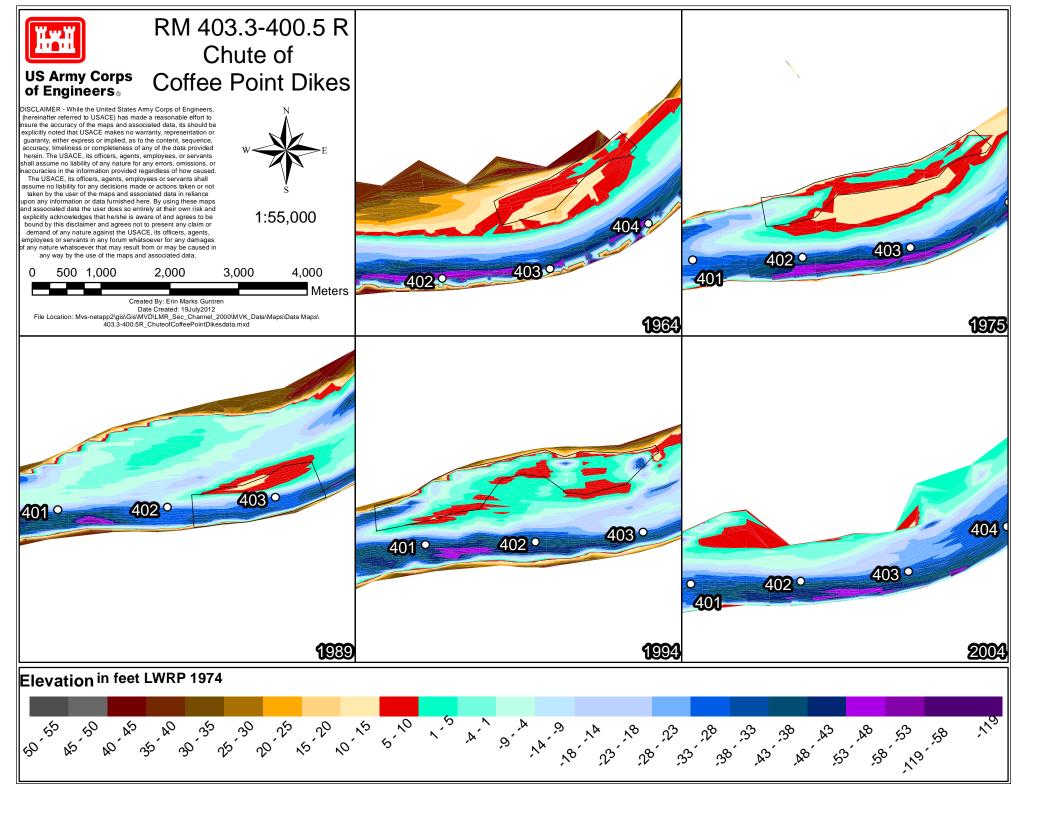
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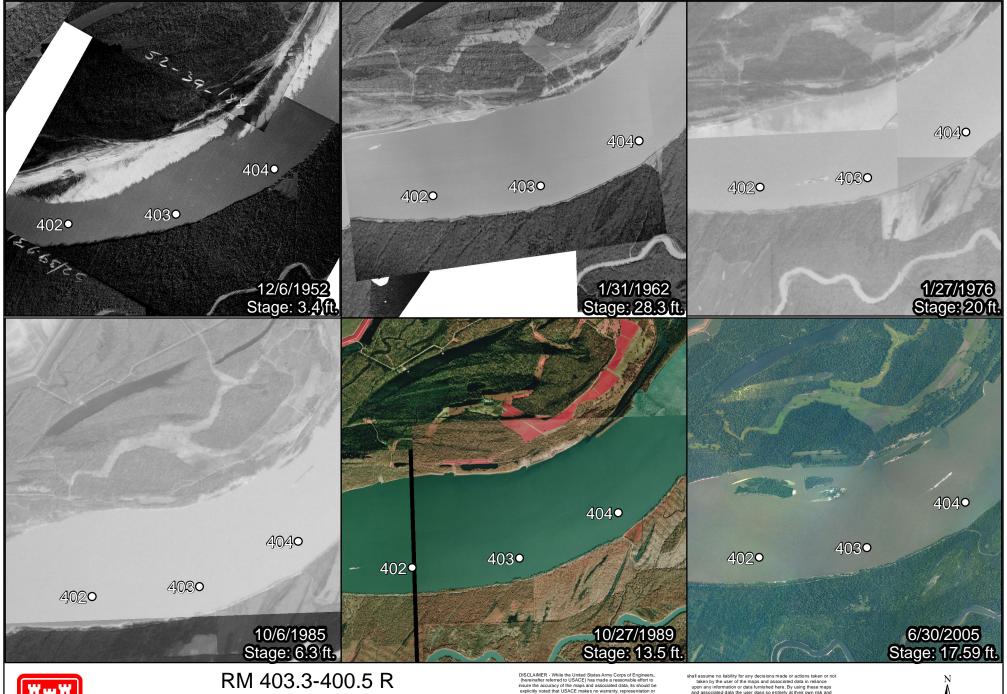


2,600 1,300

Meters

5,200







Chute of Coffee Point Dikes

1:55,000 Distance to gage: 32 river miles

Created by: Erin Marks Guntren

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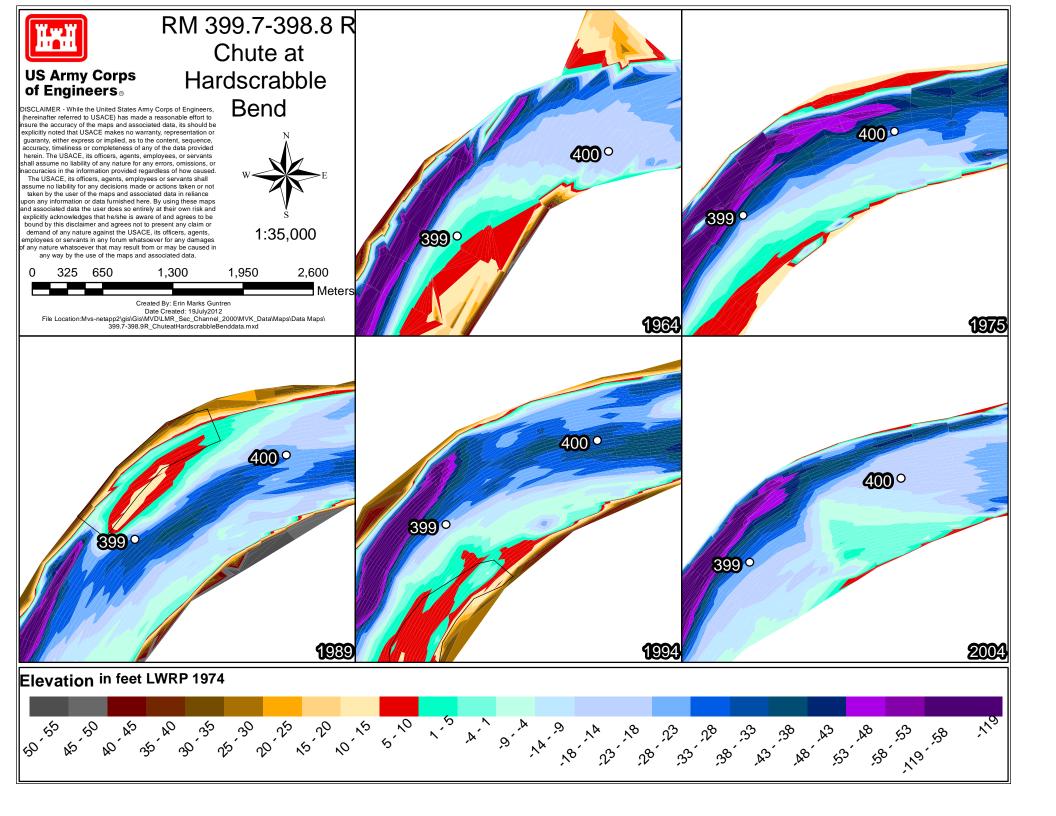
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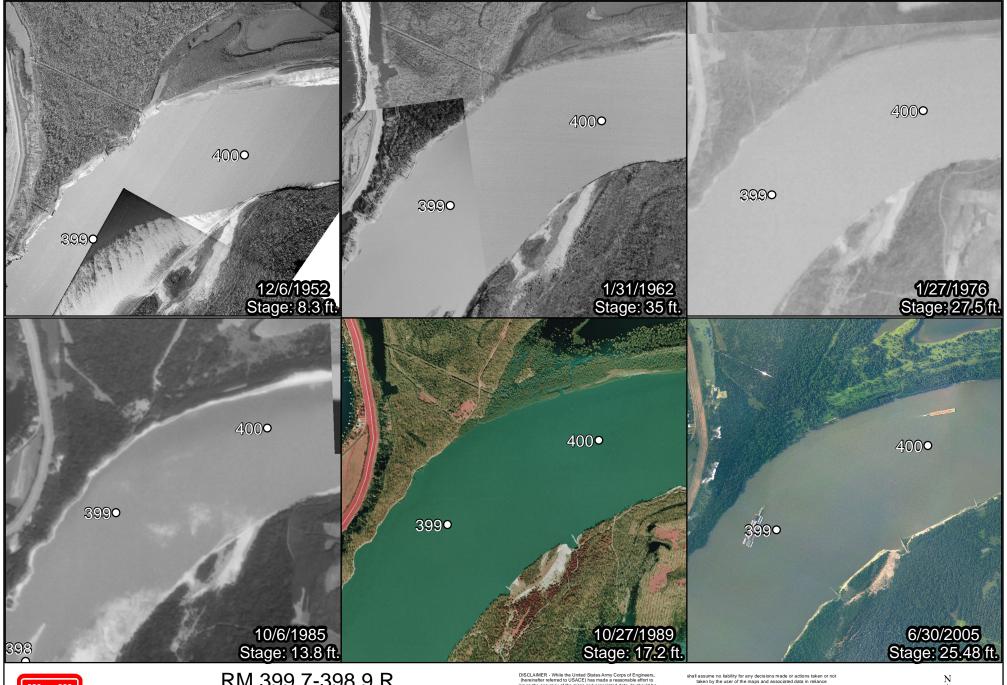
3,600



2,400 1,200

4,800







RM 399.7-398.9 R Chute at Hardscrabble Bend

1:35,000 Distance to gage: 36 river miles

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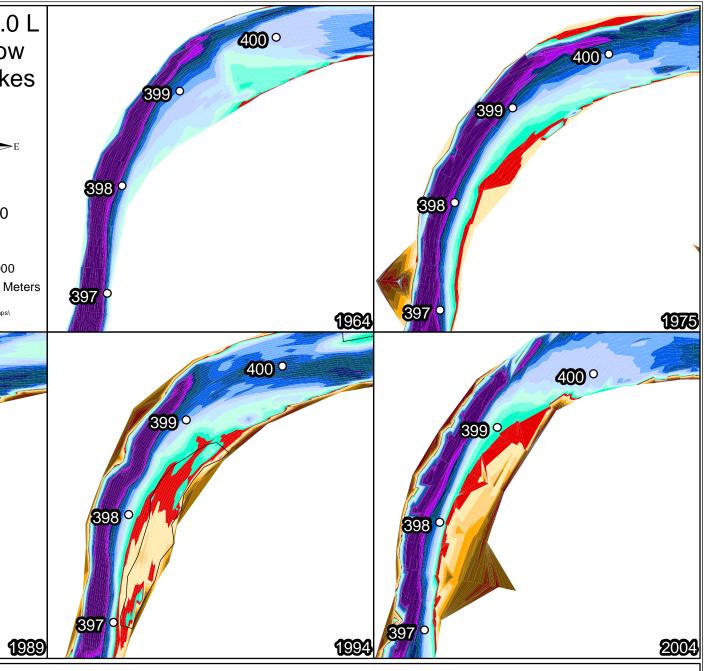
387.5 775

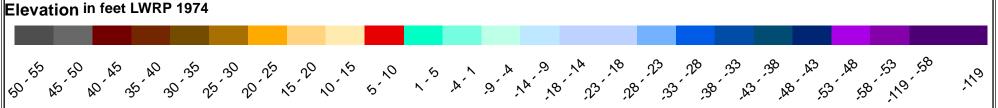
2,325

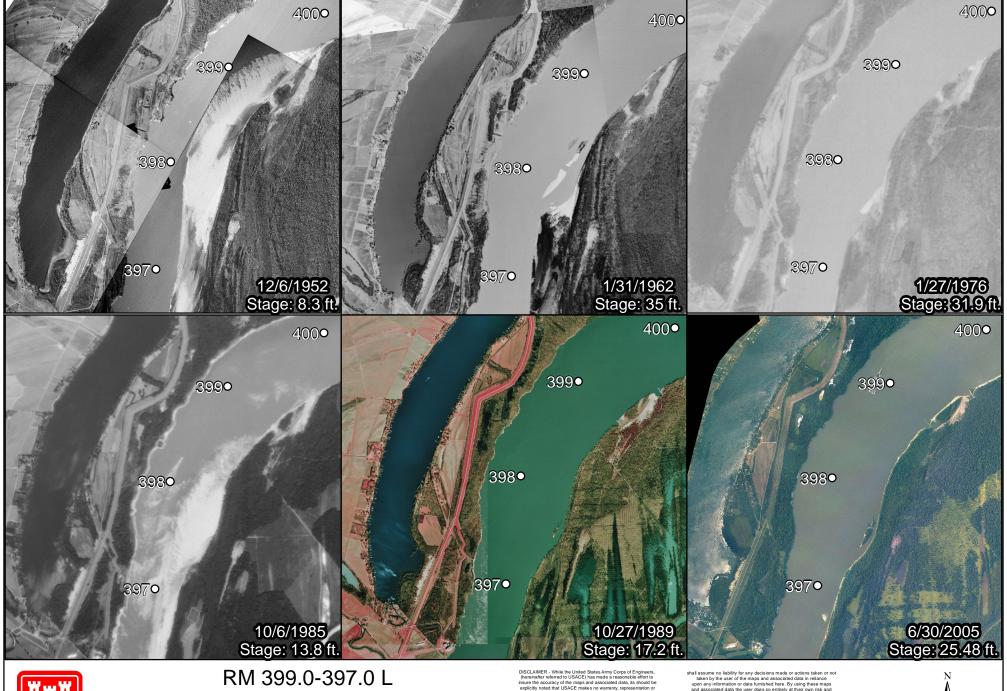
1,550

3,100

RM 399.0-397.0 L Chute of Below US Army Corps of Engineers **Grand Gulf Dikes** DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to sure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 500 1,000 2,000 3,000 4,000 Created By: Erin Marks Guntrer Date Created:19July2012 File Location:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 399.0-397.0L_ChuteofBelowGrandGulfDikesdata.mxd 400°









Chute of Below Grand Gulf Dikes

1:55,000 Distance to gage: 36 river miles

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2,400 1,200

3,600 4,800

Appendix L: Reach L – River Miles 395-345 Vicksburg District

Fourteen secondary channels were identified in Reach L (see below). No secondary channels were surveyed in all four decades and thus there is no Reach Summary for this section of river.

Table L1. Secondary channels and their upstream river mile for Reach L.

Name	River Mile	Name	River Mile	Name	River Mile
Chute Above Cottage Bend	394.3R	Chute 1 of Natchez Island Dikes	360.7R	Chute 3 of Opposite Warnicott Landing Dikes	351.2L
Chute of Cottage Bend Dikes	388.4L	Chute 2 of Natchez Island Dikes	358.5R	Chute of Esperance Point Dikes	347.1R
Chute Below Browns Field Dikes	388.0R	Chute of Carthage Point	357.9L		
Chute of Spithead Towhead Dikes	385.8L	Chute Outside Carthage Point	357.4L		
Chute of Waterproof Cutoff	379.6R	Chute 1 of Opposite Warnicott Landing Dikes	353.4L		
Chute at Fairchilds Bend	372.5L	Chute 2 of Opposite Warnicott Landing Dikes	352.2L		

Table L2. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach L. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Voor	Come	Area (Acres)				Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute Above Cottage Bend	394.3- 390.7R	1964	100%	50	240	380	480	1,351,000	7,340,000	
Chute Above Cottage Bend	394.3- 390.7R	1975	100%	210	270	350	400	5,598,000	11,123,000	
Chute Above Cottage Bend	394.3- 390.7R	1989	100%	150	260	390	550	2,628,000	9,068,000	
Chute Above Cottage Bend	394.3- 390.7R	1994	100%	180	280	400	530	3,522,000	9,992,000	
Chute Above Cottage Bend	394.3- 390.7R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Cottage Bend Dikes	388.4- 386.9L	1964	100%	90	140	220	270	1,538,000	5,011,000	
Chute of Cottage Bend Dikes	388.4- 386.9L	1975	100%	250	360	460	550	6,114,000	13,534,000	
Chute of Cottage Bend Dikes	388.4- 386.9L	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Cottage Bend Dikes	388.4- 386.9L	1994	80%	0	0	0	10	1,000	70,000	
Chute of Cottage Bend Dikes	388.4- 386.9L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute Below Browns Field Dikes	388- 386.4R	1964	100%	0	0	0	0	0	0	
Chute Below Browns Field Dikes	388- 386.4R	1975	100%	0	0	0	0	0	0	
Chute Below Browns Field Dikes	388- 386.4R	1989	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute Below Browns Field Dikes	388- 386.4R	1994	100%	0	10	20	40	46,000	404,000	
Chute Below Browns Field Dikes	388- 386.4R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Spithead Towhead Dikes	385.8- 382.8L	1964	100%	0	0	0	100	0	308,000	
Chute of Spithead Towhead Dikes	385.8- 382.8L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Spithead Towhead Dikes	385.8- 382.8L	1989	100%	100	140	200	290	1,801,000	5,163,000	
Chute of Spithead Towhead Dikes	385.8- 382.8L	1994	100%	100	140	200	280	2,161,000	5,384,000	

Cacandan, Ohannal	River	Year	Cvrg.		Area	(Acres)	Volume (yd³)		
Secondary Channel	Miles			-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Spithead Towhead Dikes	385.8- 382.8L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Waterproof Cutoff	379.6- 374.1R	1964	100%	270	310	340	360	5,857,000	11,287,000
Chute of Waterproof Cutoff	379.6- 374.1R	1975	100%	160	260	330	380	3,567,000	8,748,000
Chute of Waterproof Cutoff	379.6- 374.1R	1989	100%	40	130	320	450	880,000	5,894,000
Chute of Waterproof Cutoff	379.6- 374.1R	1994	100%	150	330	560	770	3,067,000	11,952,000
Chute of Waterproof Cutoff	379.6- 374.1R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fairchilds Bend	372.5- 371.4L	1964	100%	0	0	0	0	0	0
Chute at Fairchilds Bend	372.5- 371.4L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fairchilds Bend	372.5- 371.4L	1989	100%	0	0	0	0	0	0
Chute at Fairchilds Bend	372.5- 371.4L	1994	90%	0	0	0	0	0	21,000
Chute at Fairchilds Bend	372.5- 371.4L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Natchez Island Dikes	360.7- 359.3R	1964	100%	0	0	0	0	0	0
Chute 1 of Natchez Island Dikes	360.7- 359.3R	1975	100%	0	0	0	0	0	0
Chute 1 of Natchez Island Dikes	360.7- 359.3R	1989	100%	0	0	10	20	0	127,000
Chute 1 of Natchez Island Dikes	360.7- 359.3R	1994	100%	0	10	20	40	19,000	340,000
Chute 1 of Natchez Island Dikes	360.7- 359.3R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Natchez Island Dikes	358.5- 357.3R	1964	100%	0	0	0	0	0	0
Chute 2 of Natchez Island Dikes	358.5- 357.3R	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Natchez Island Dikes	358.5- 357.3R	1989	100%	0	10	40	110	24,000	832,000
Chute 2 of Natchez Island Dikes	358.5- 357.3R	1994	100%	0	0	10	60	2,000	301,000
Chute 2 of Natchez Island Dikes	358.5- 357.3R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

Canandan Obana	River Miles	Year	0		Area	(Acres)	Volume (yd³)		
Secondary Channel			Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Carthage Point	357.9- 354.9L	1964	100%	0	30	90	150	110,000	1,564,000
Chute of Carthage Point	357.9- 354.9L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Carthage Point	357.9- 354.9L	1989	100%	0	0	0	0	0	0
Chute of Carthage Point	357.9- 354.9L	1994	100%	0	0	0	0	0	0
Chute of Carthage Point	357.9- 354.9L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Outside Carthage Point	357.4- 356.6L	1964	100%	0	0	0	10	5,000	50,000
Chute Outside Carthage Point	357.4- 356.6L	1975	100%	0	0	0	0	0	0
Chute Outside Carthage Point	357.4- 356.6L	1989	100%	0	0	0	0	0	0
Chute Outside Carthage Point	357.4- 356.6L	1994	100%	0	0	20	80	0	474,000
Chute Outside Carthage Point	357.4- 356.6L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 1 of Opposite Warnicott Landing Dikes	353.4- 352.6L	1964	100%	0	0	0	0	0	0
Chute 1 of Opposite Warnicott Landing Dikes	353.4- 352.6L	1975	100%	0	0	0	0	0	0
Chute 1 of Opposite Warnicott Landing Dikes	353.4- 352.6L	1989	100%	0	10	20	30	46,000	399,000
Chute 1 of Opposite Warnicott Landing Dikes	353.4- 352.6L	1994	100%	0	0	10	60	2,000	258,000
Chute 1 of Opposite Warnicott Landing Dikes	353.4- 352.6L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Opposite Warnicott Landing Dikes	352.2- 351.4L	1964	100%	0	0	0	0	0	0
Chute 2 of Opposite Warnicott Landing Dikes	352.2- 351.4L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 2 of Opposite Warnicott Landing Dikes	352.2- 351.4L	1989	100%	0	0	0	0	0	0

Secondary Channel	River Miles	Year	Curre		Area	(Acres)	Volume (yd³)		
			Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute 2 of Opposite Warnicott Landing Dikes	352.2- 351.4L	1994	100%	0	0	10	70	6,000	370,000
Chute 2 of Opposite Warnicott Landing Dikes	352.2- 351.4L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute 3 of Opposite Warnicott Landing Dikes	351.2- 346.3L	1964	100%	0	0	10	90	0	343,000
Chute 3 of Opposite Warnicott Landing Dikes	351.2- 346.3L	1975	100%	50	150	230	320	1,290,000	4,998,000
Chute 3 of Opposite Warnicott Landing Dikes	351.2- 346.3L	1989	100%	110	230	390	620	2,162,000	8,585,000
Chute 3 of Opposite Warnicott Landing Dikes	351.2- 346.3L	1994	0%	no bath	no bath	no bath	no bath	no bath	no bath
Chute 3 of Opposite Warnicott Landing Dikes	351.2- 346.3L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Esperance Point Dikes	347.1- 345.3R	1964	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Esperance Point Dikes	347.1- 345.3R	1975	100%	0	0	0	0	0	0
Chute of Esperance Point Dikes	347.1- 345.3R	1989	100%	0	30	90	110	96,000	1,424,000
Chute of Esperance Point Dikes	347.1- 345.3R	1994	100%	0	0	10	30	21,000	199,000
Chute of Esperance Point Dikes	347.1- 345.3R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

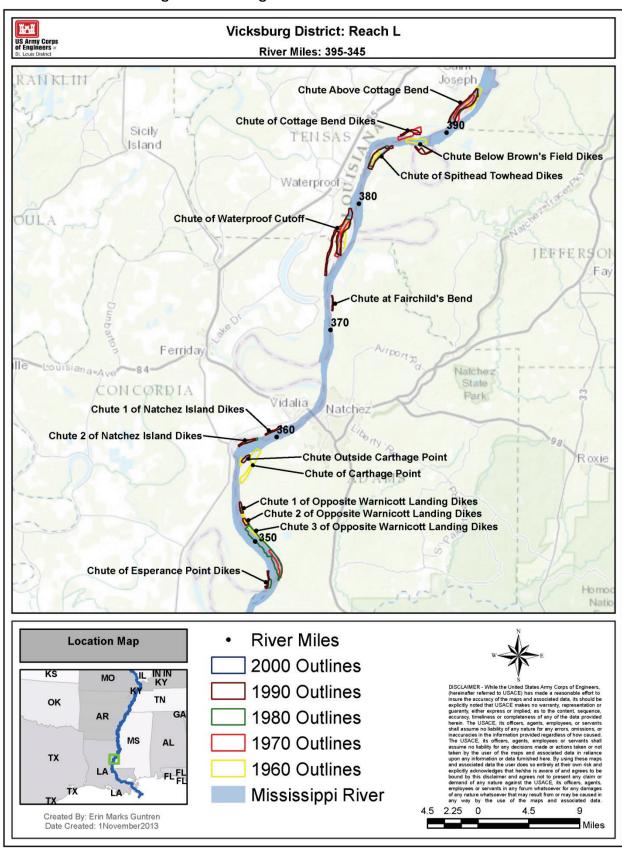
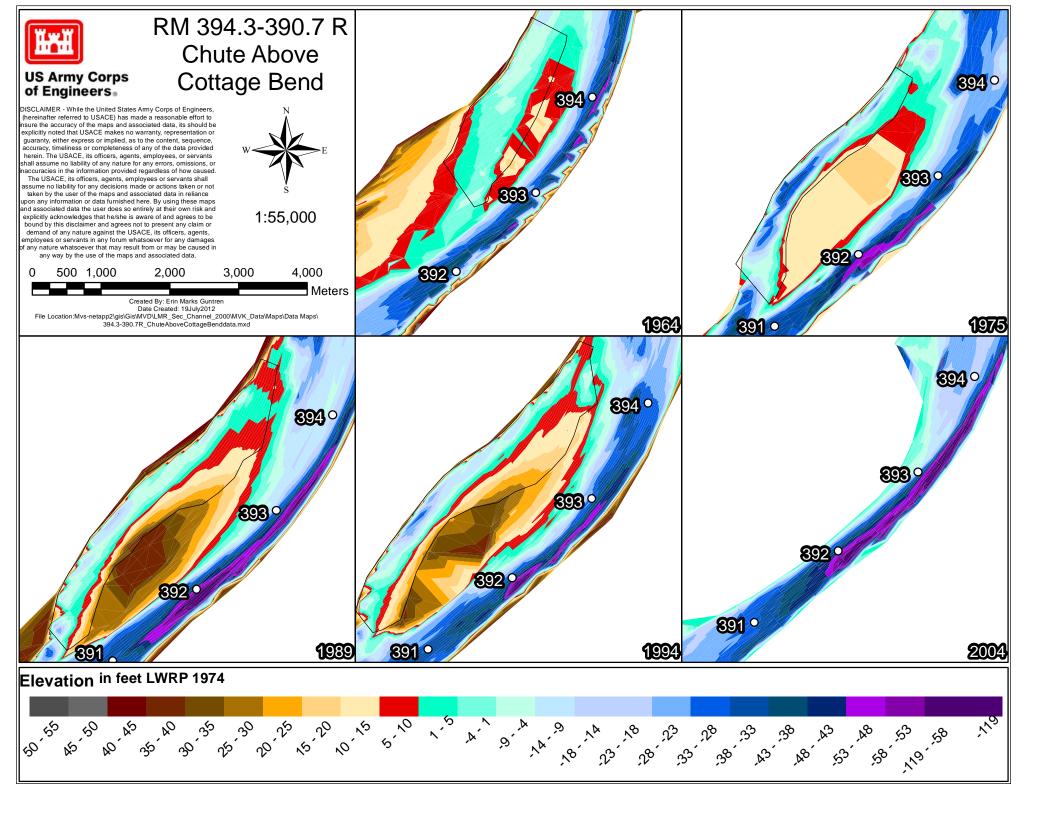
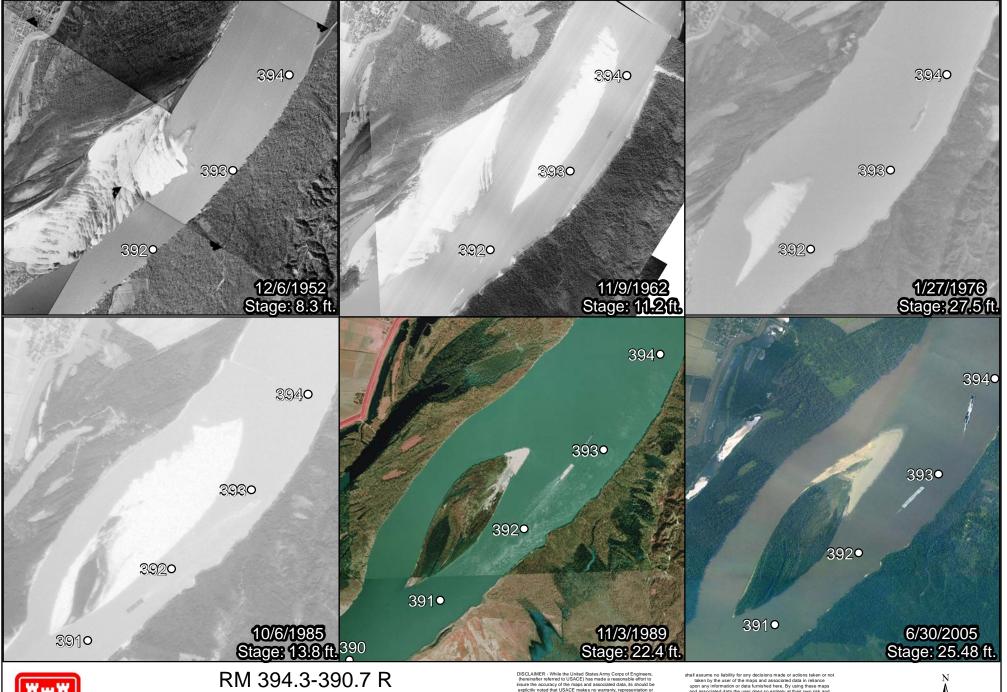


Figure L1. Vicksburg District Reach L river miles 395-345.







RM 394.3-390.7 R Chute above Cottage Bend

1:55,000 Distance to gage: 31 river miles

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Date Created: 11August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
394.3-390.7R_ChuteaboveCottageBendphotos.mxd

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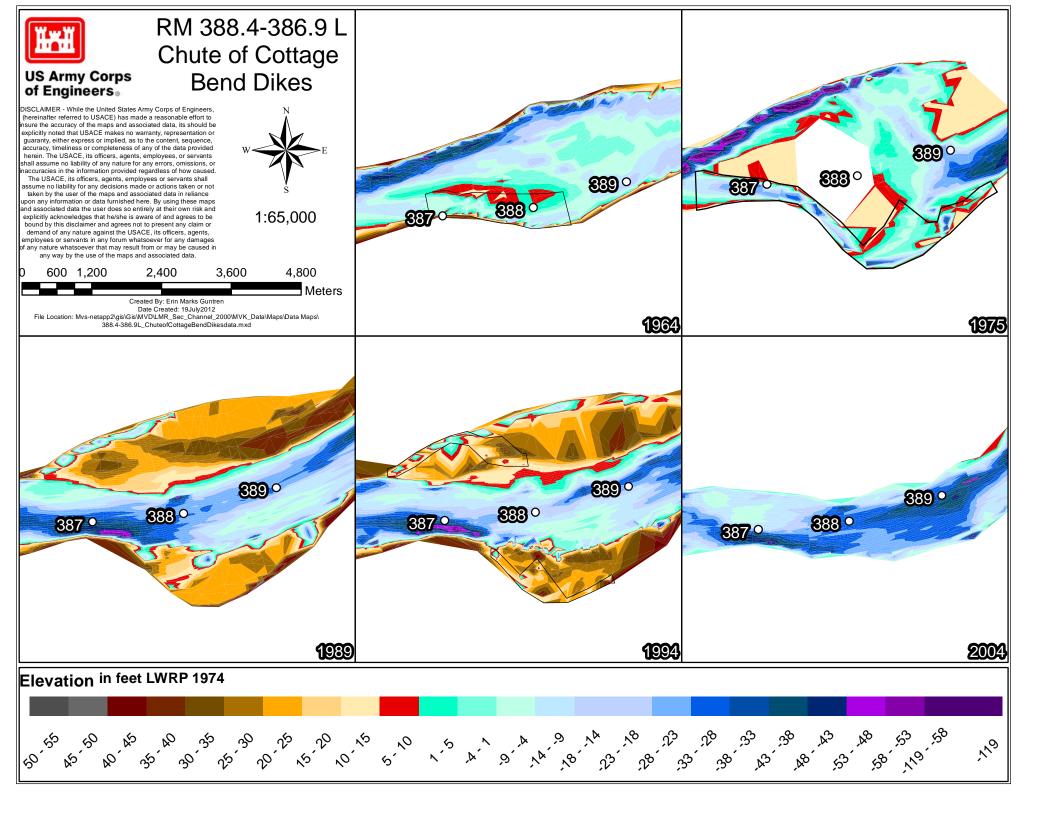


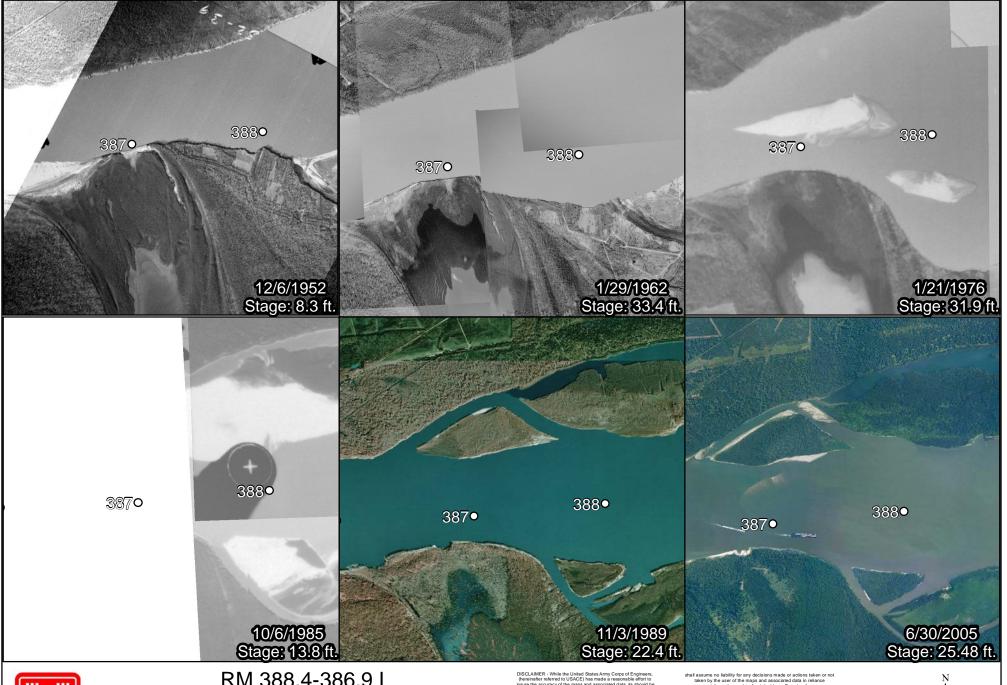
0 600 1,200

3,600

2,400

4,800







RM 388.4-386.9 L Chute of Cottage Bend Dikes

1:45,000 Distance to gage: 25 river miles

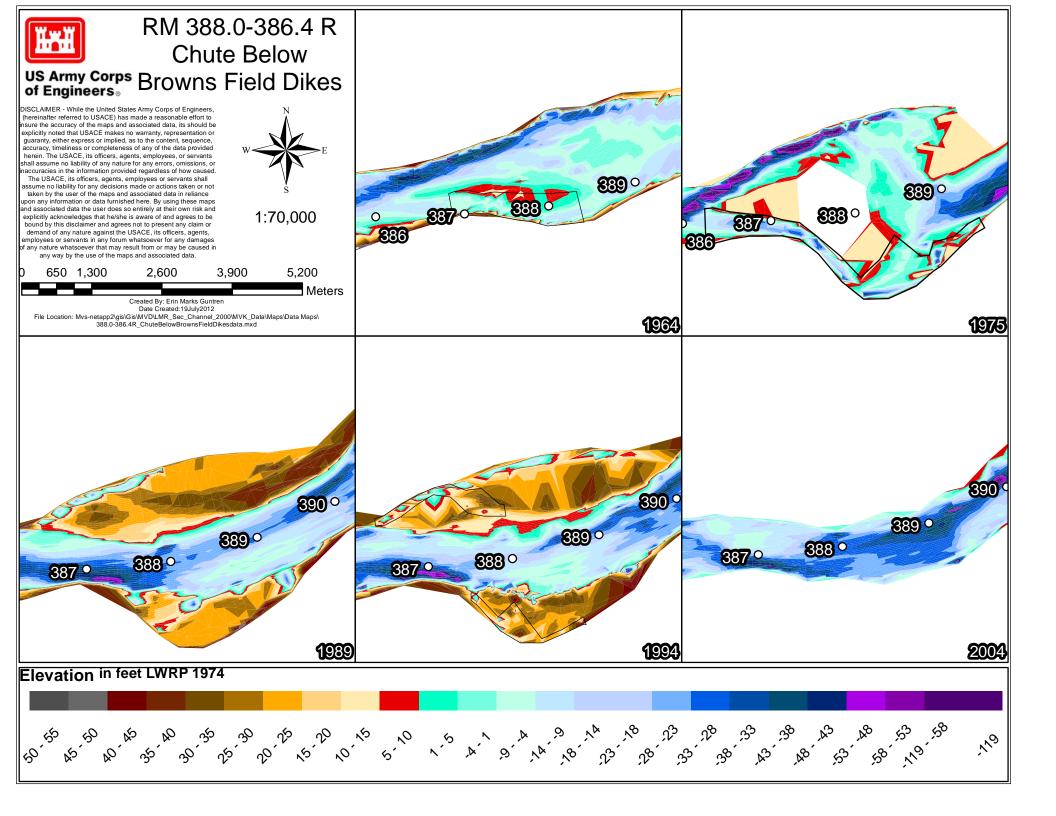
Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 388.4-386.9L_ChuteofCottageBendDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereinafter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, it is should be the state of the s

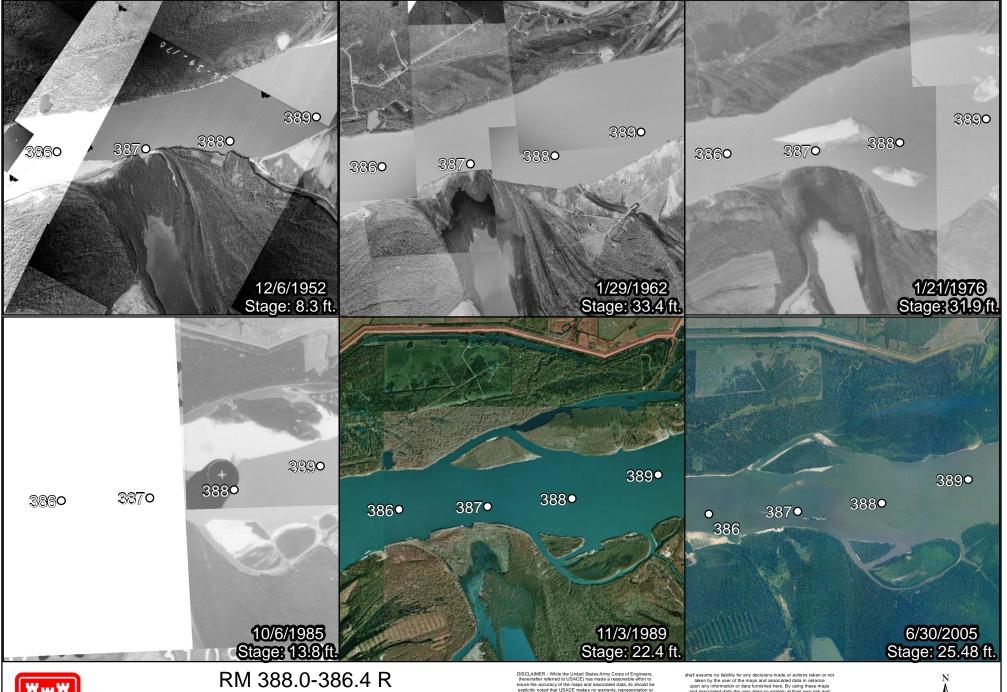
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1,000

2,000 3,000 4,000







RM 388.0-386.4 R Chute below Browns Field Dikes

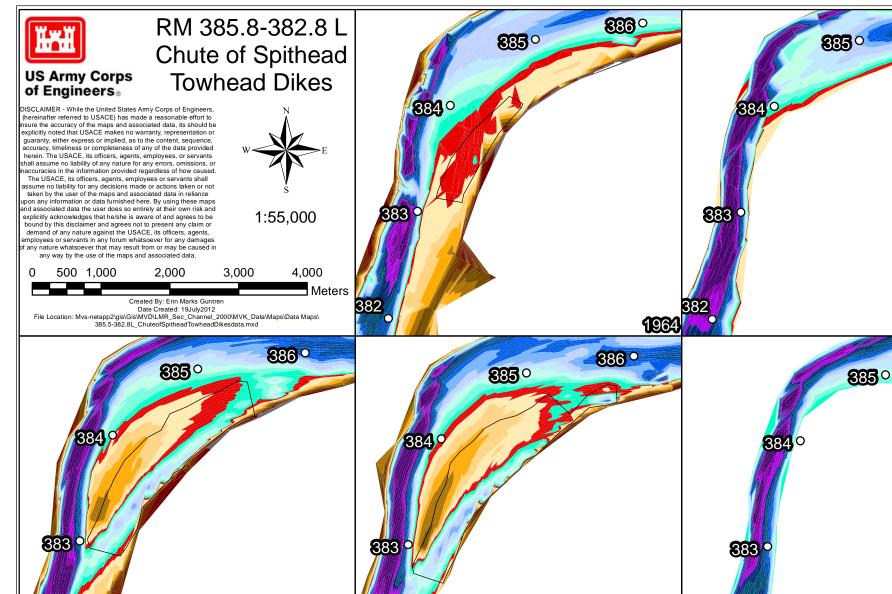
1:70,000 Distance to gage: 25 river miles

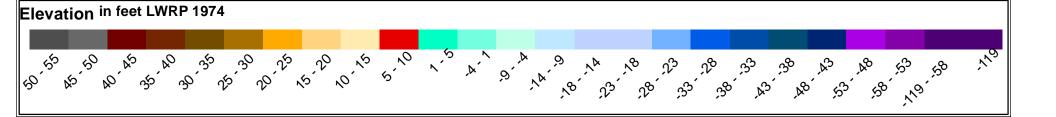
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Date Created: 11August2012
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388.0-386.4R_ChutebelowBrownsFieldDikesphotos.mxd

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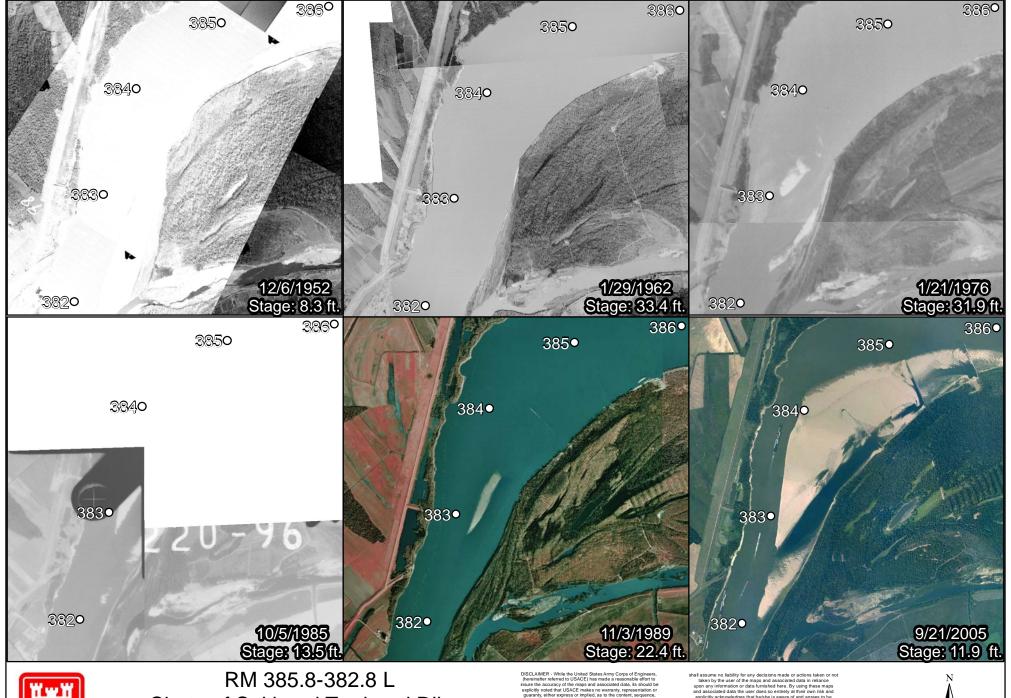


750 1,500 3,000 4,500 6,000 Meters





382 c





Chute of Spithead Towhead Dikes

1:55,000 Distance to gage: 22 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 385.8-382.8L_ChuteoSpitheadTowheadDikesphotos.mxd

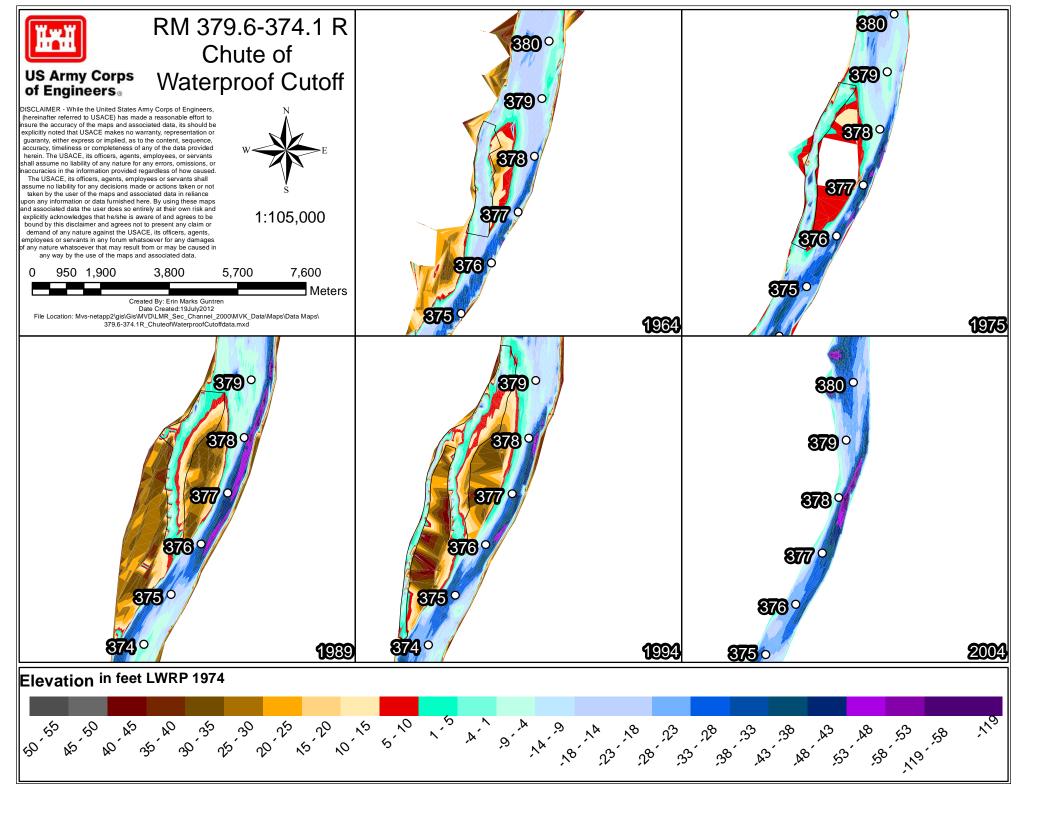
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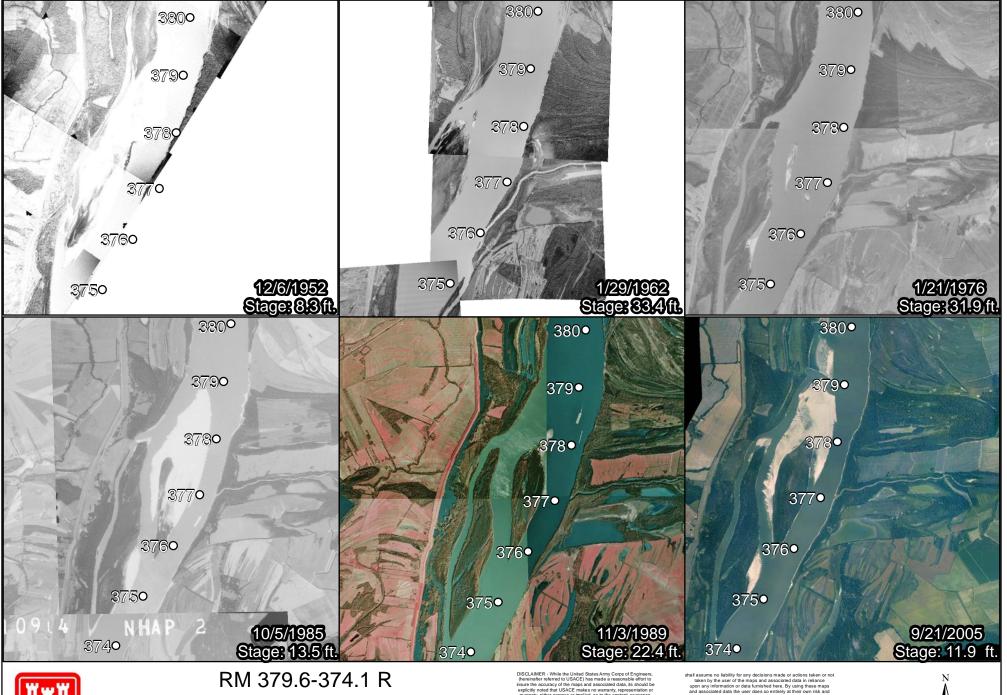
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1,200

2,400 3,600 4,800







RM 379.6-374.1 R Chute of Waterproof Cutoff

1:105,000 Distance to gage: 16 river miles

1.100,000 Distance to gage. To fiver filles

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Date Created: 11August2012
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379.6-374.1R_WaterproofCutoffphotos.mxd

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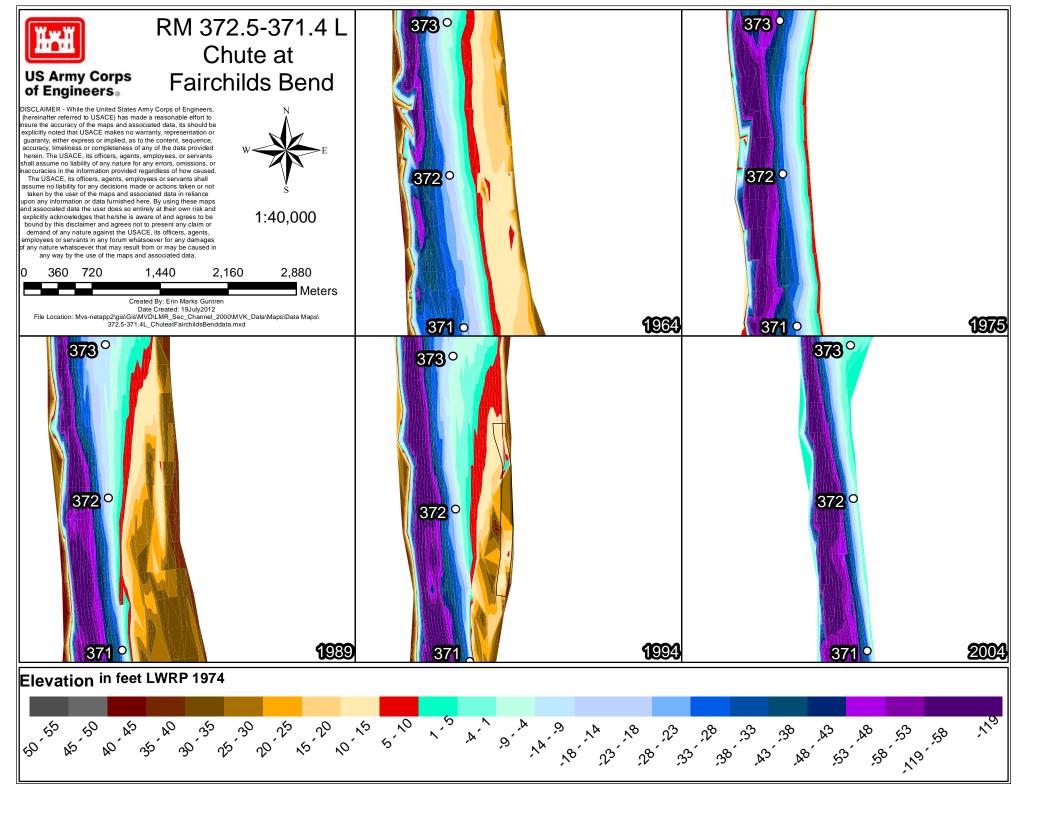


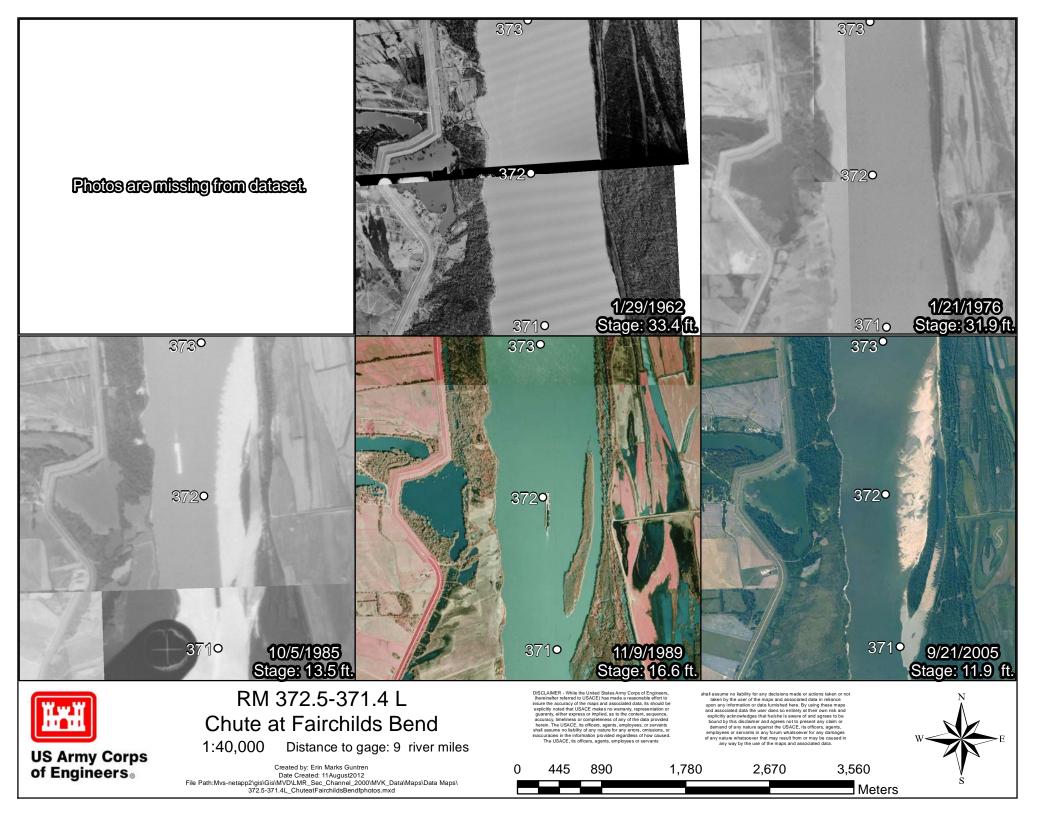
0 1,150 2,300

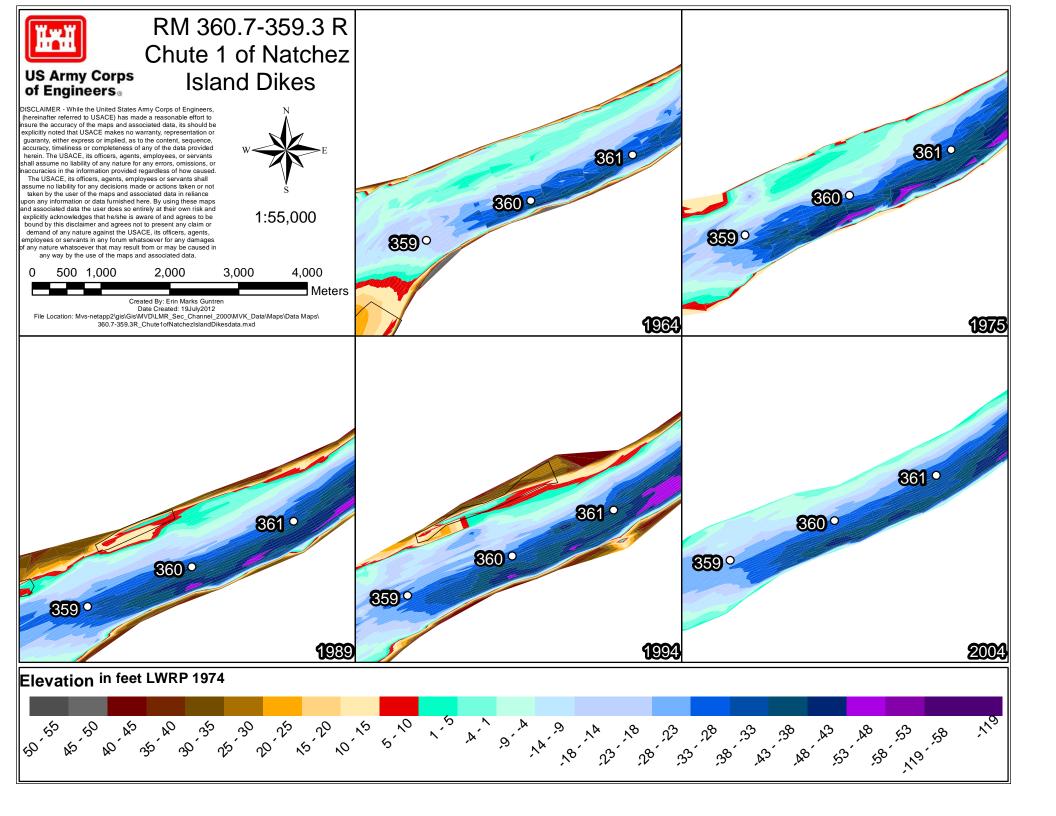
4,600

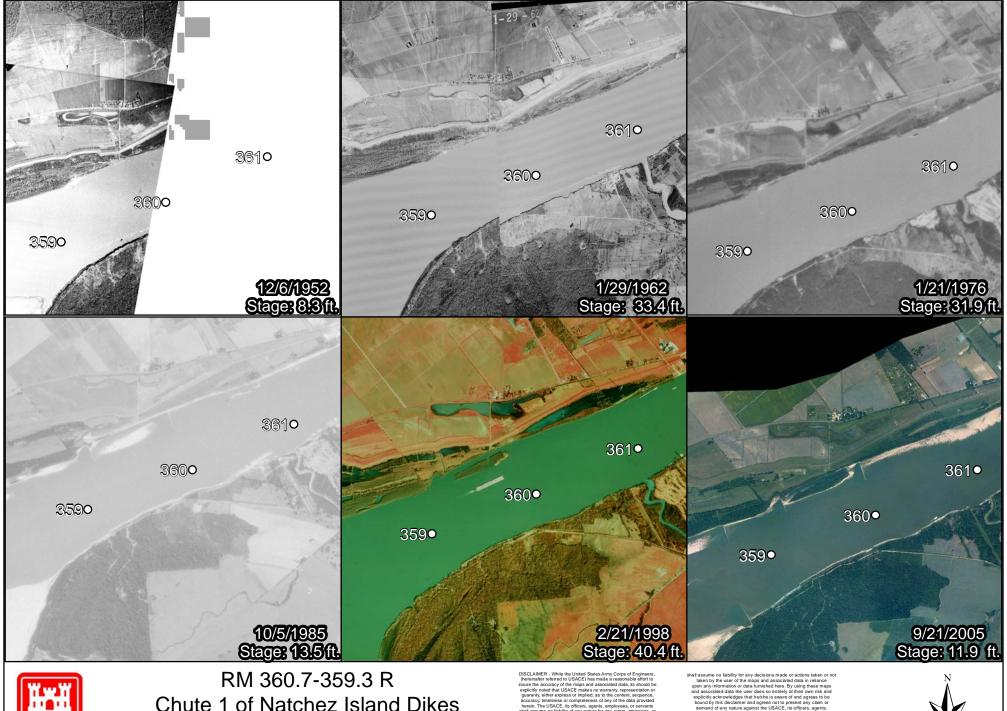
6,900 9,200

Nator









US Army Corps of Engineers.

Chute 1 of Natchez Island Dikes

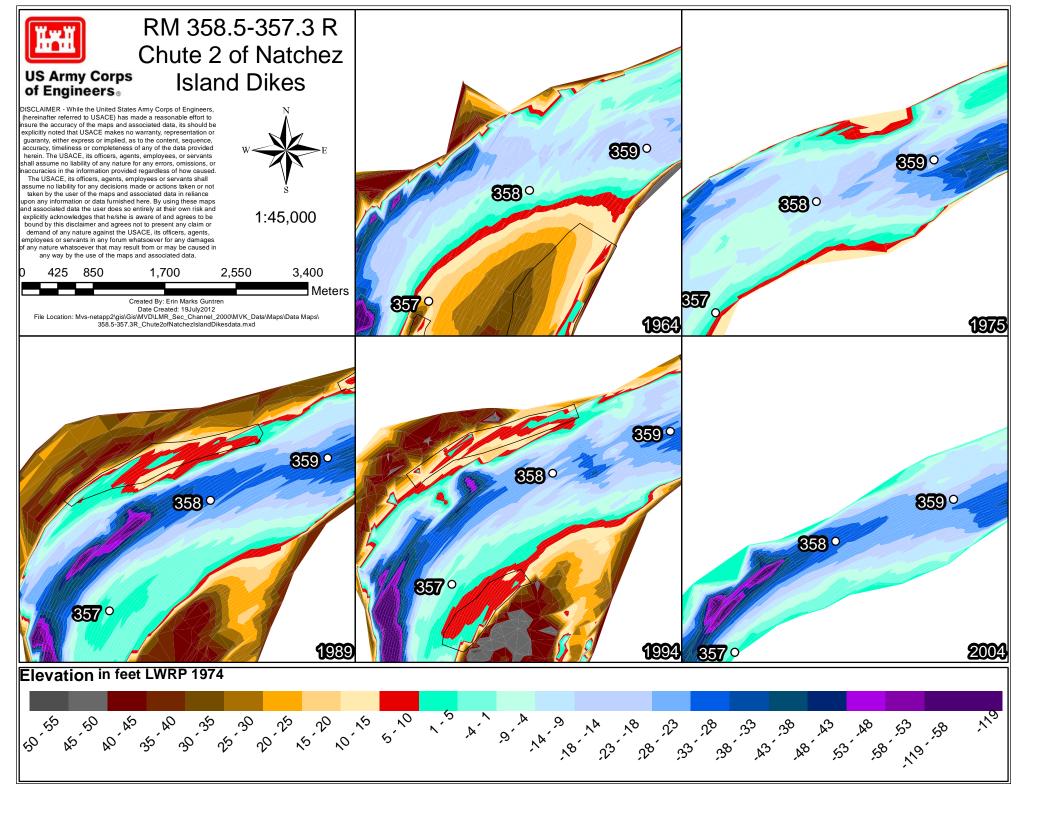
1:55,000 Distance to gage: 3 river miles

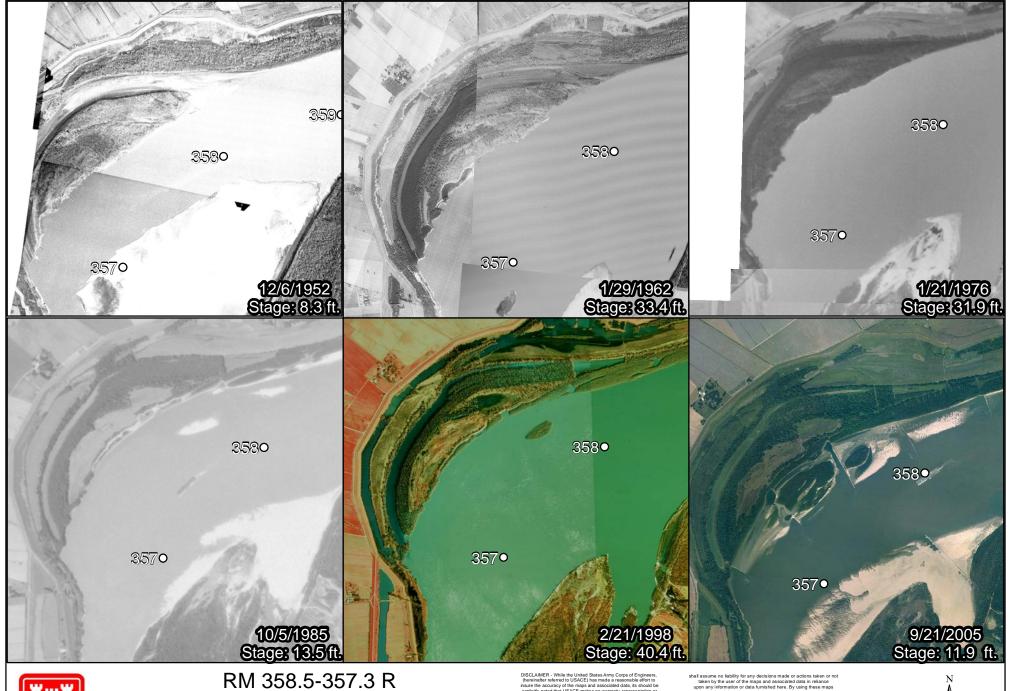
Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 360.7-359.3R_Chute1ofNatchezIslandDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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1,200 2,400 3,600 4,800







RM 358.5-357.3 R Chute 2 of Natchez Island Dikes

1:45,000 Distance to gage: 5 river miles

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Date Created: 11August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
358.5-357.3R_Chule2of\Matchez!slandDikesphotos.mxd

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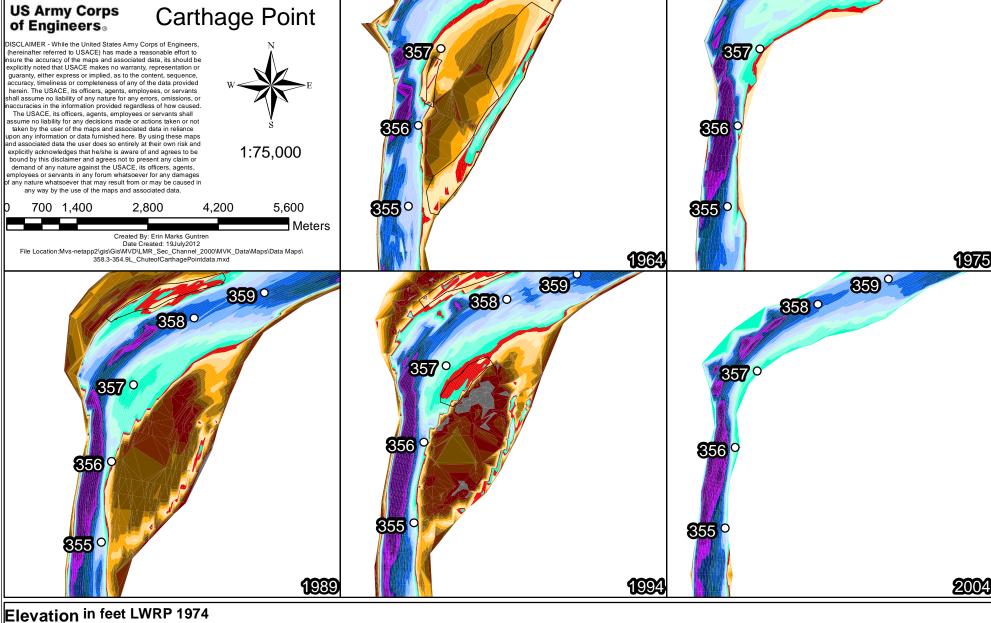
500 1,000

2,000 3,000

4,000

US Army Corps of Engineers. 700 1,400



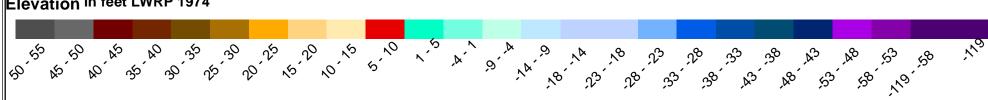


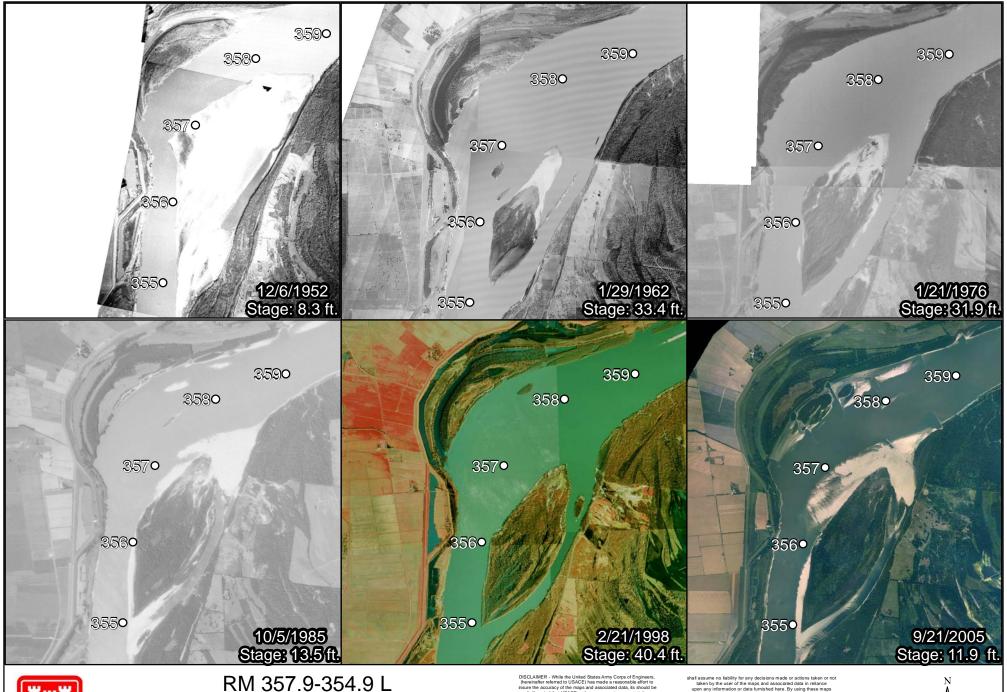
359°

358°

359°

353°







RM 357.9-354.9 L Chute of Carthage Point

1:75,000 Distance to gage: 6 river miles

Created by: Erin Marks Guntren Date Created: 11 August2012 File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\ 357.4-356.6L_ChuteoutsideCarthagePointphotos.mxd

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3,200 6,400 800 1,600 4,800 Meters

US Army Corps of Engineers.

RM 357.4-356.6 L Chute Outside Carthage Point

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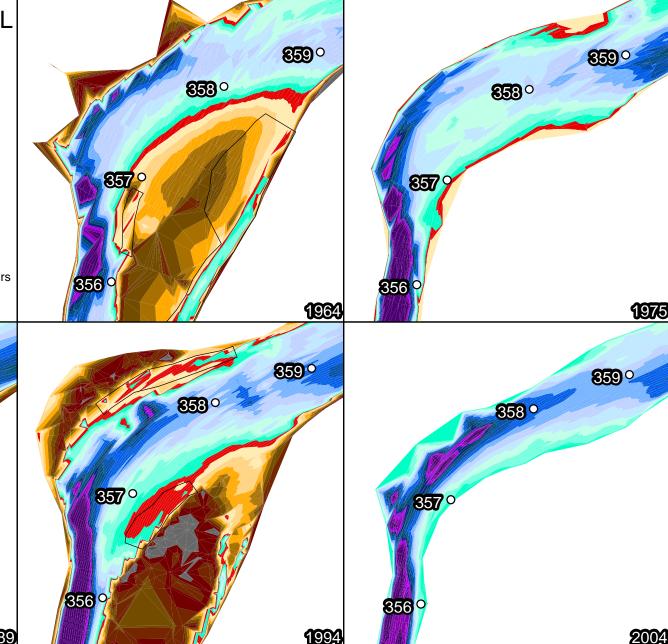


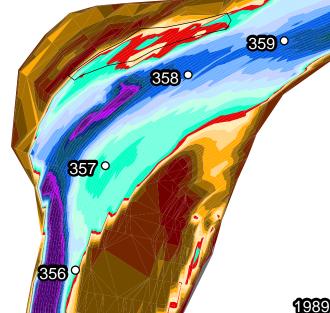
1:55,000

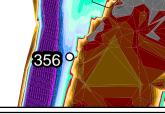
4,000 500 1,000 2,000 3,000 Meters Created By: Erin Marks Guntre

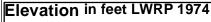
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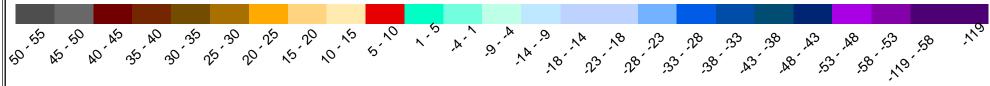
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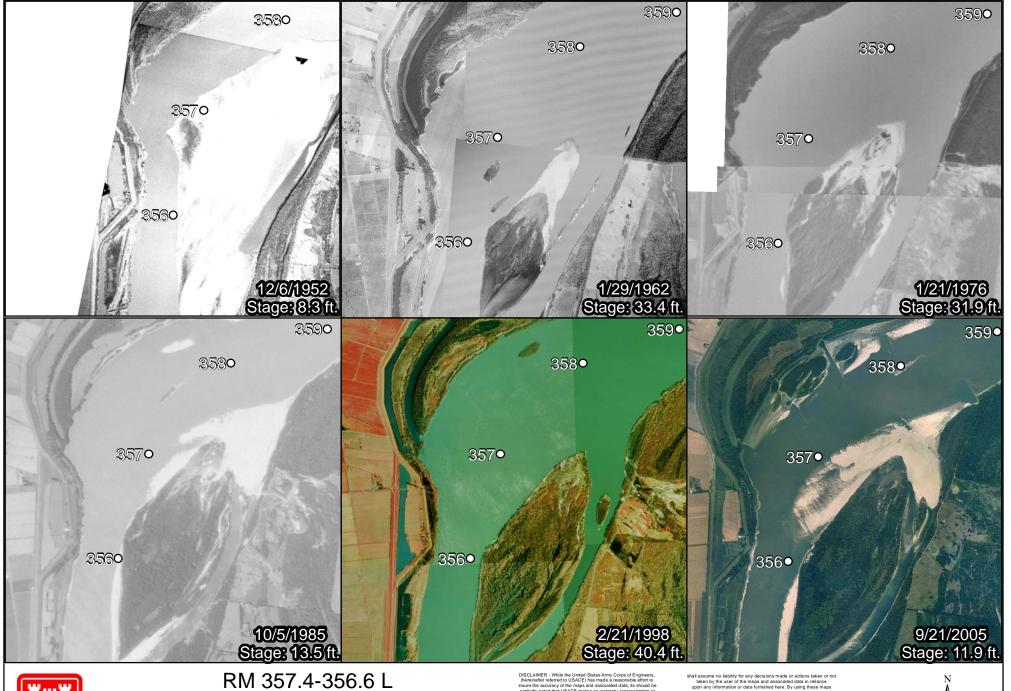














RM 357.4-356.6 L Chute Outside Carthage Point

1:55,000 Distance to gage: 6 river miles

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Date Created: 11August2012
File Path:Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVK_Data\Maps\Data Maps\
357.4-356.6L_ChuteoutsideCarthagePointphotos.mxd

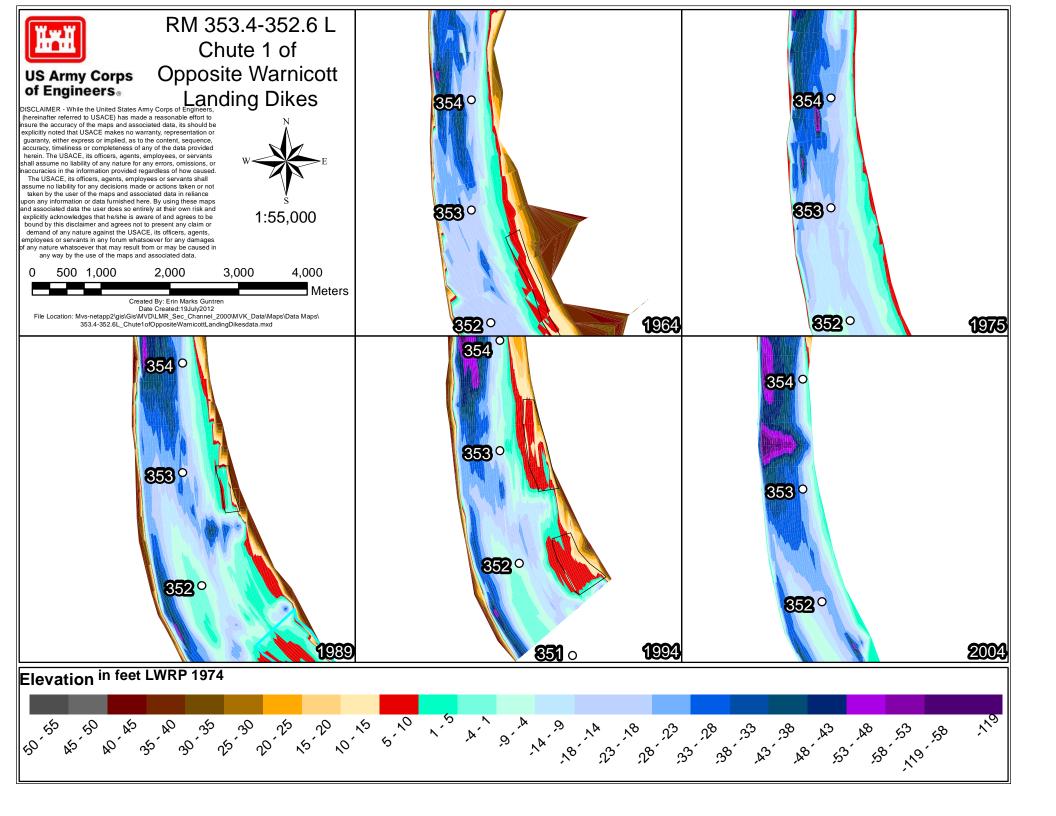
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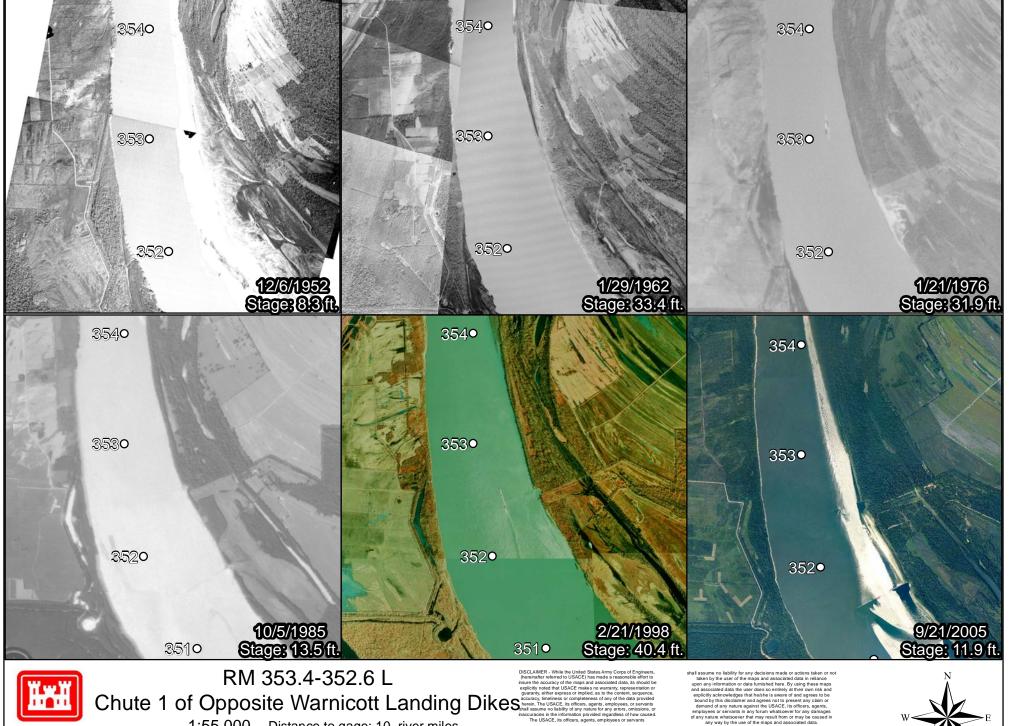
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600 1,200 2,400

3,600 4,800





US Army Corps of Engineers.

1:55,000 Distance to gage: 10 river miles

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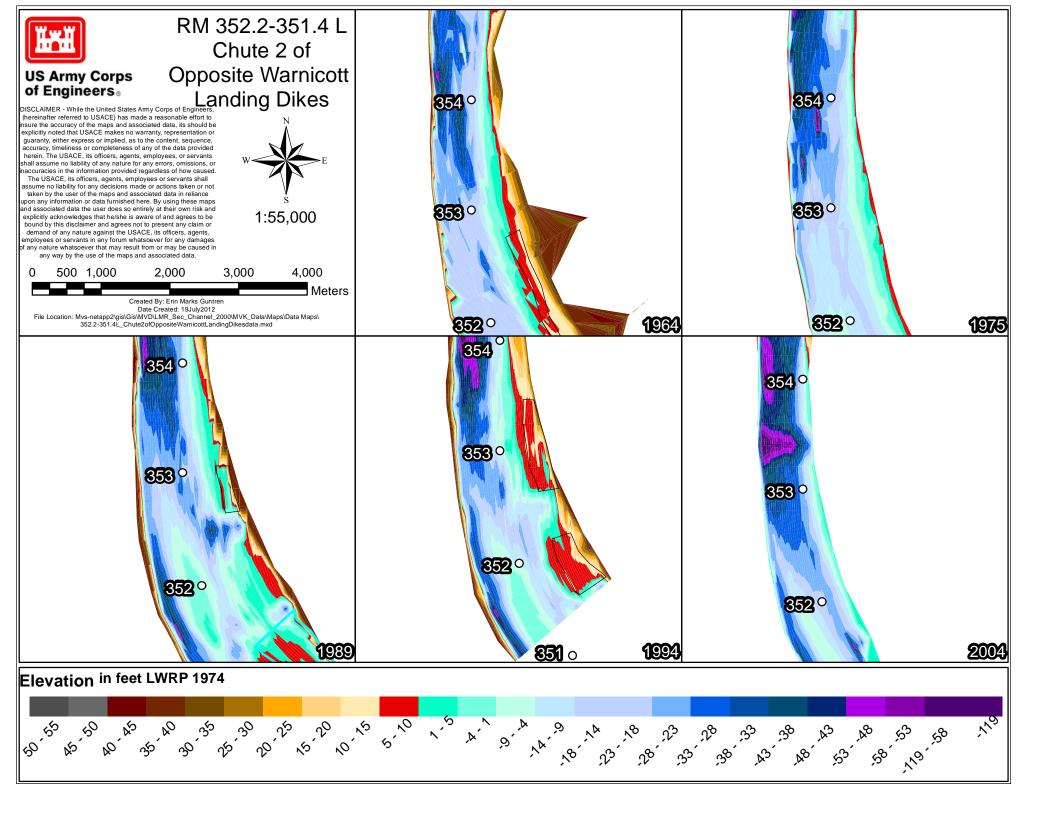
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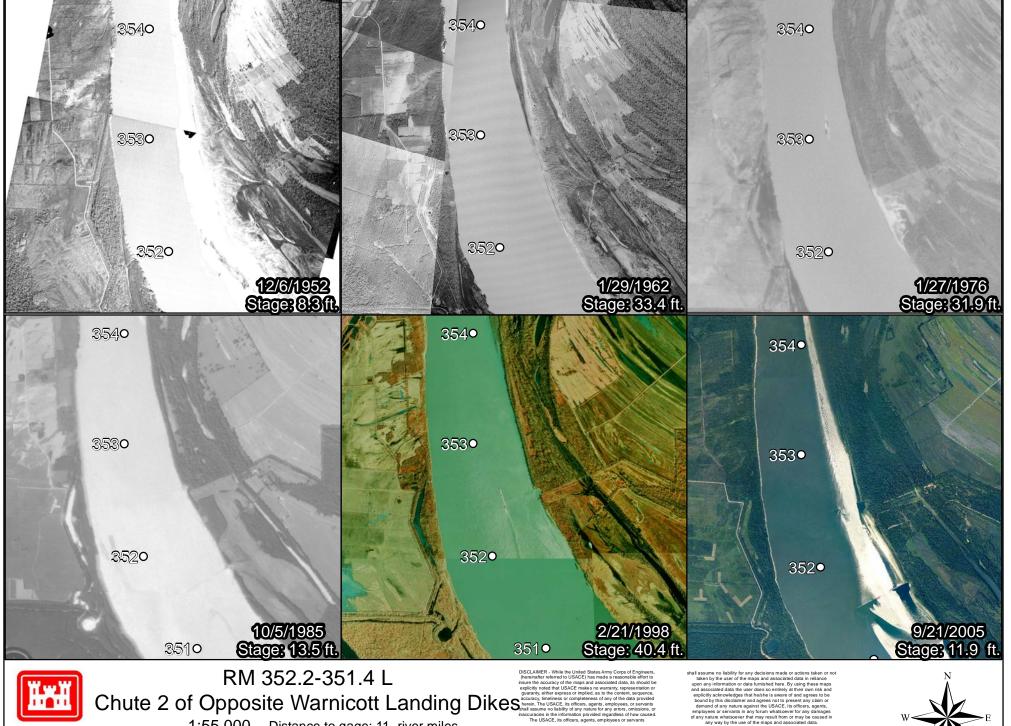
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3,600

4,800







US Army Corps of Engineers.

1:55,000 Distance to gage: 11 river miles

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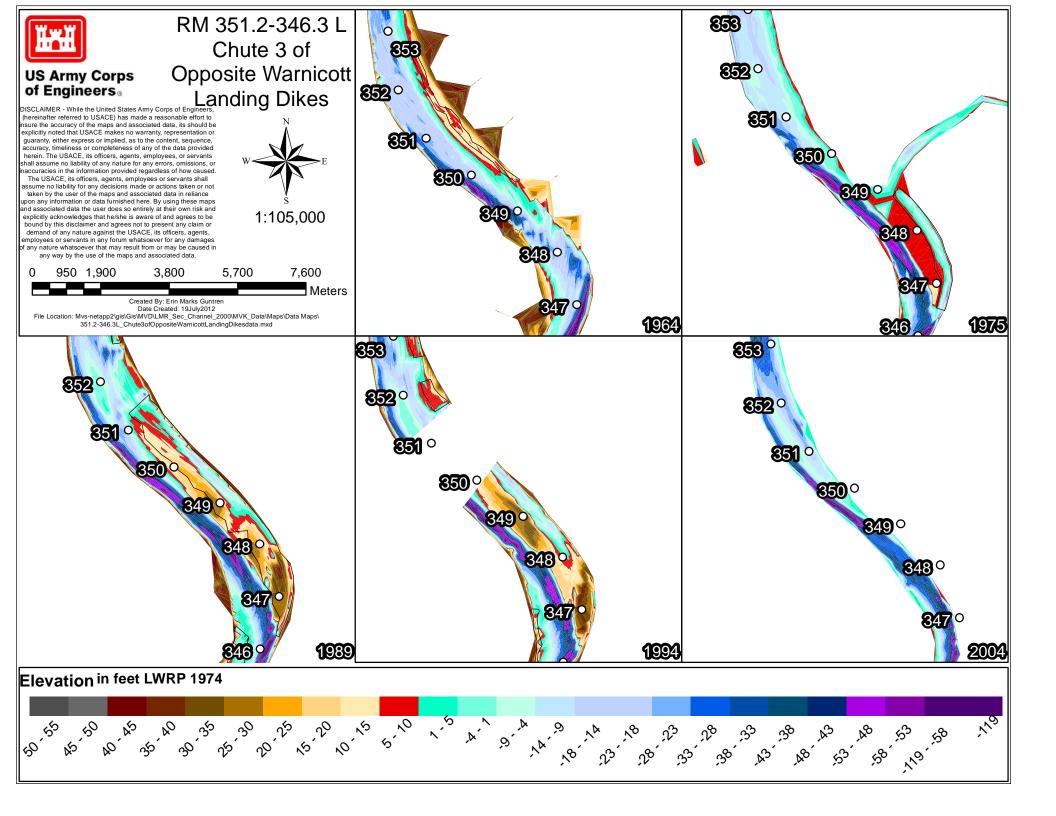
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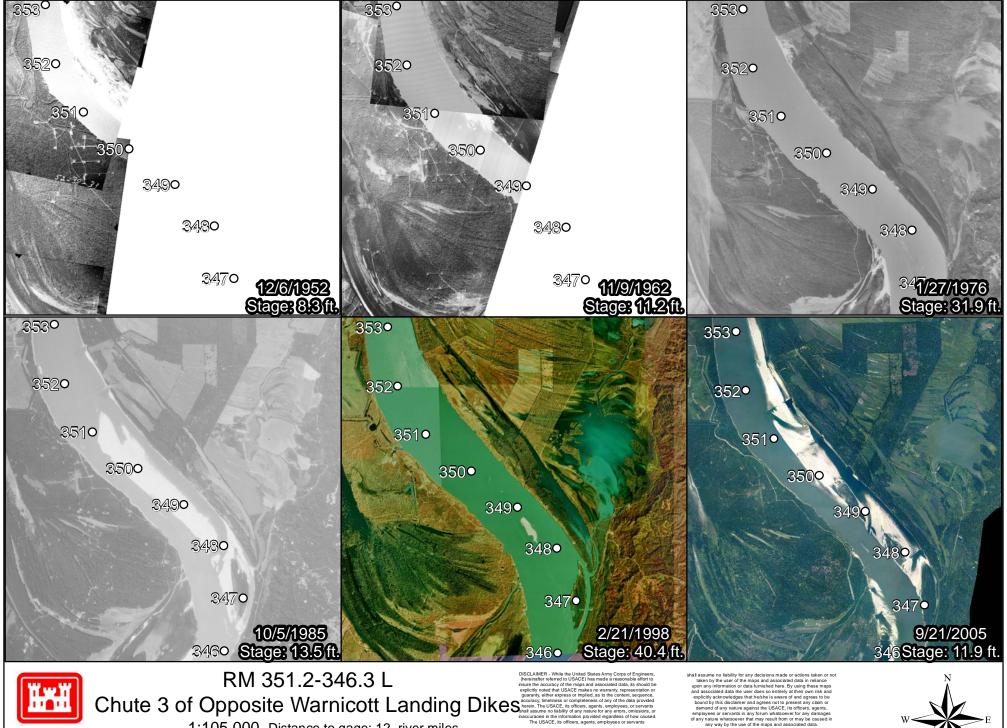
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US Army Corps of Engineers.

1:105,000 Distance to gage: 12 river miles

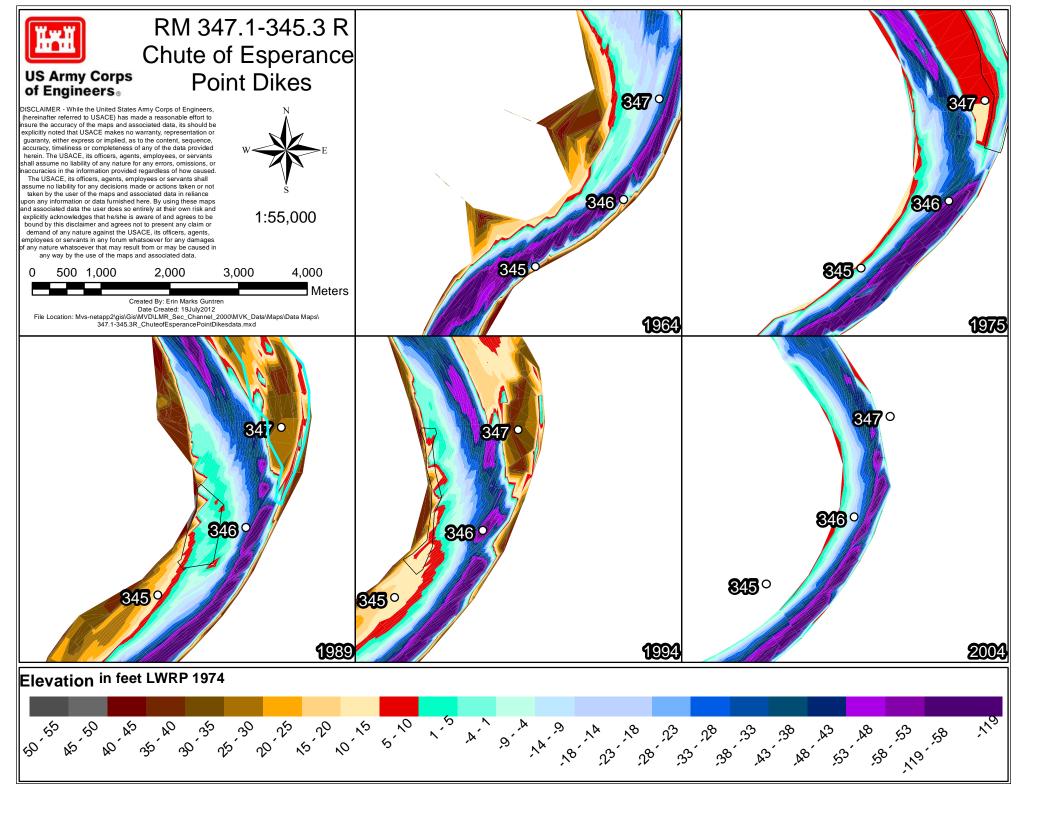
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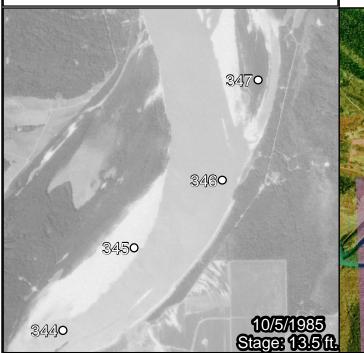
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RM 347.1-345.3 R Chute of Esperance Point Dikes

1:55,000 Distance to gage: 16 river miles

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Date Created: 11 August2012
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Appendix M: Reach M – River Miles 345-324 Vicksburg District

Because each district manages the river differently, this reach was shortened to 21 miles to end at the edge of the Vicksburg district. Three secondary channels were identified in Reach M (see below). Only one secondary channel was surveyed in all four decades; therefore, there is no Reach Summary for this section of river.

Table M1. Secondary channels and their upstream river mile for Reach M; the channel in bold is the only channel with data for all decades.

Name	River Mile
Chute of Fritz Island Dikes	337.5R
Chute of Jackson Point Dikes	330.7L
Chute at Union Point	325.8R

Table M2. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach M. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River Miles	Year	Cvrg.		Area	(Acres)	Volume (yd³)		
			Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Fritz Island Dikes	337.5- 335.5R	1964	100%	0	0	10	150	0	653,000
Chute of Fritz Island Dikes	337.5- 335.5R	1975	100%	0	0	0	0	0	0
Chute of Fritz Island Dikes	337.5- 335.5R	1989	100%	0	0	80	270	0	1,808,000
Chute of Fritz Island Dikes	337.5- 335.5R	1994	100%	10	40	80	150	223,000	1,548,000
Chute of Fritz Island Dikes	337.5- 335.5R	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Jackson Point Dikes	330.7- 329.2L	1964	100%	0	0	30	160	0	825,000
Chute of Jackson Point Dikes	330.7- 329.2L	1975	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Jackson Point Dikes	330.7- 329.2L	1989	100%	0	0	10	70	1,000	347,000
Chute of Jackson Point Dikes	330.7- 329.2L	1994	100%	0	10	40	100	58,000	805,000
Chute of Jackson Point Dikes	330.7- 329.2L	2000	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Union Point	325.8- 322.6R	1964	100%	50	110	250	290	911,000	4,011,000
Chute at Union Point	325.8- 322.6R	1975	100%	150	230	290	340	3,264,000	7,931,000
Chute at Union Point	325.8- 322.6R	1989	100%	130	230	310	390	2,551,000	7,507,000
Chute at Union Point	325.8- 322.6R	1994	100%	140	210	290	390	3,303,000	8,009,000
Chute at Union Point	325.8- 322.6R	2000	100%	110	210	290	290	2,094,000	6,487,000

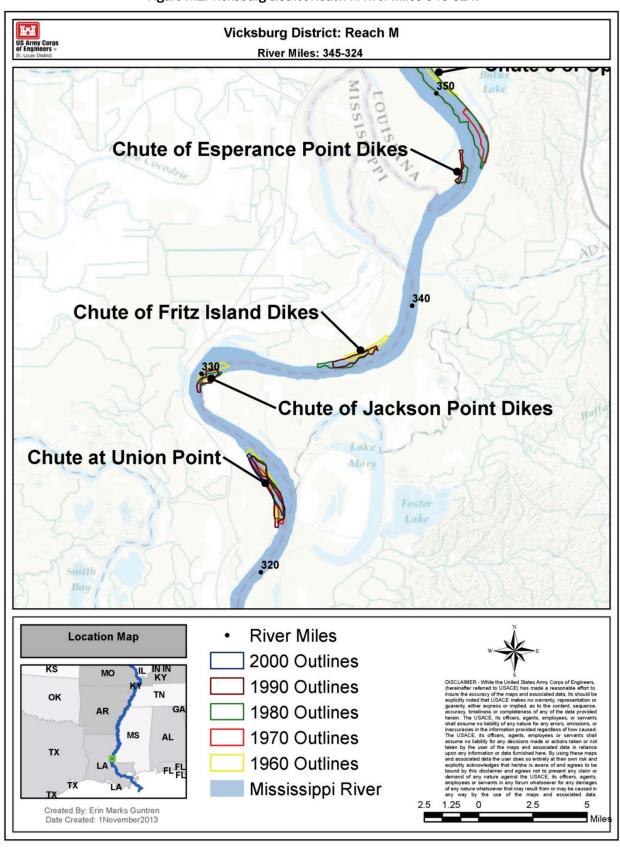
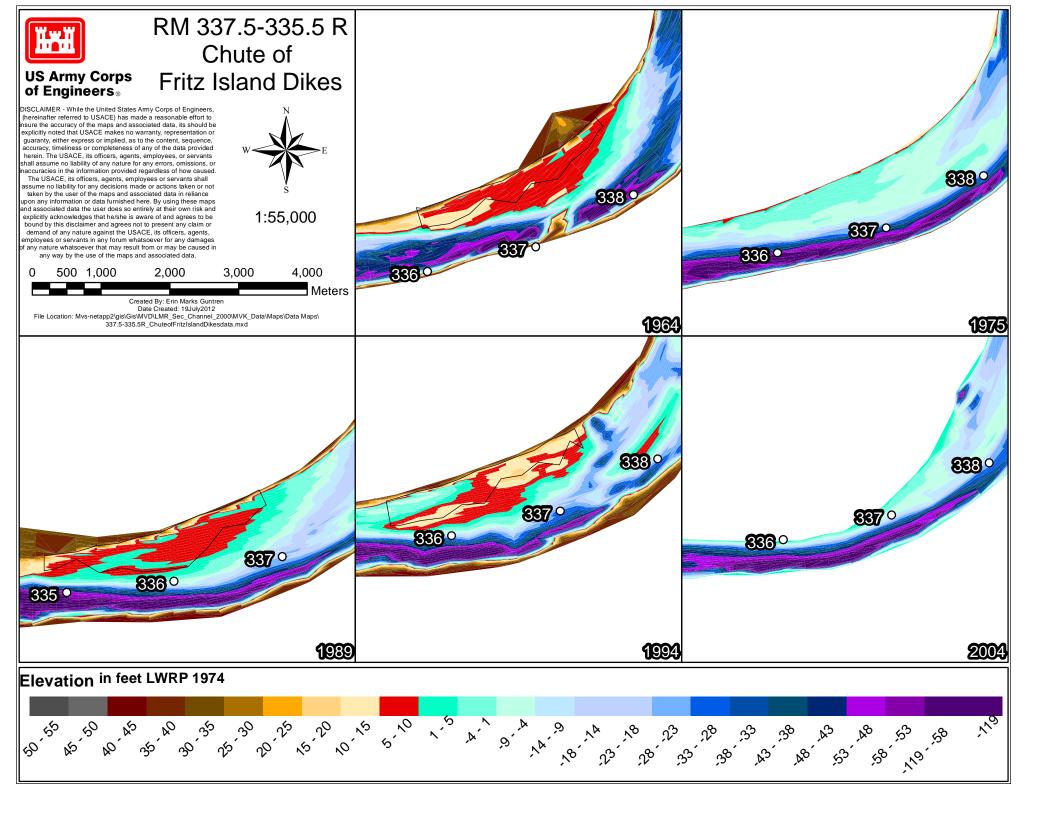
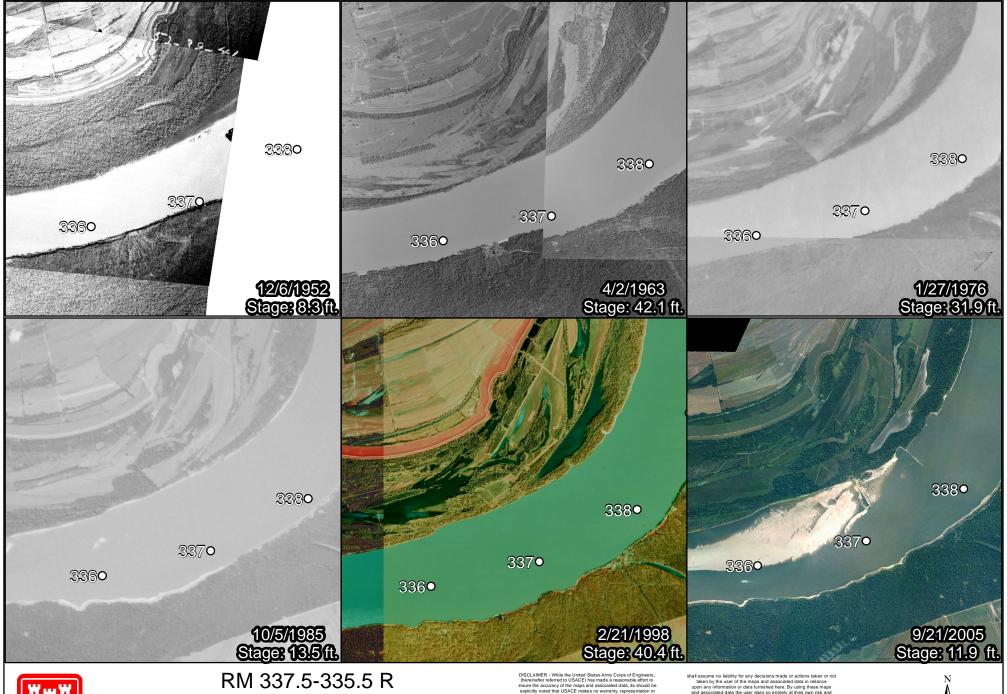


Figure M1. Vicksburg district Reach M river miles 345-324.







Chute of Fritz Island Dikes

1:55,000 Distance to gage: 26 river miles

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337.5-335.5R_ChuteofFritzIslandDikesphotos.mxd DISCLAIMER - While the United States Army Corps of Engineers, thereivalter referred to USACE) has made a reasonable effort to insure the accuracy of the maps and associated data, is should be the state of the stat

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2,400 1,200

3,600

4,800

US Army Corps of Engineers®

RM 330.7-329.2 L Chute of Jackson **Point Dikes**

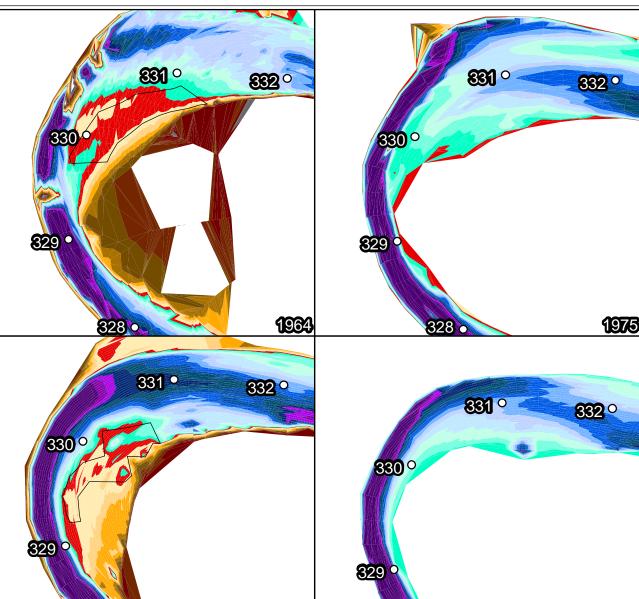
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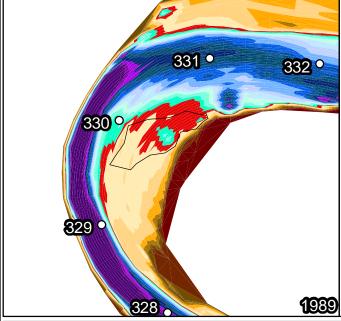


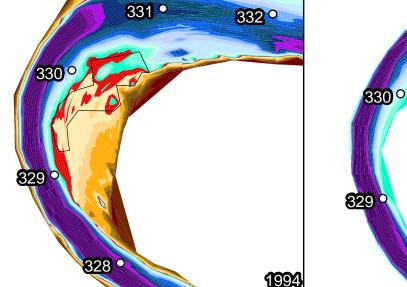
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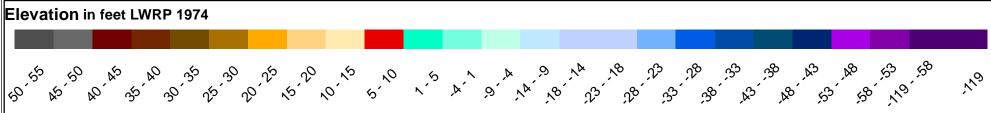


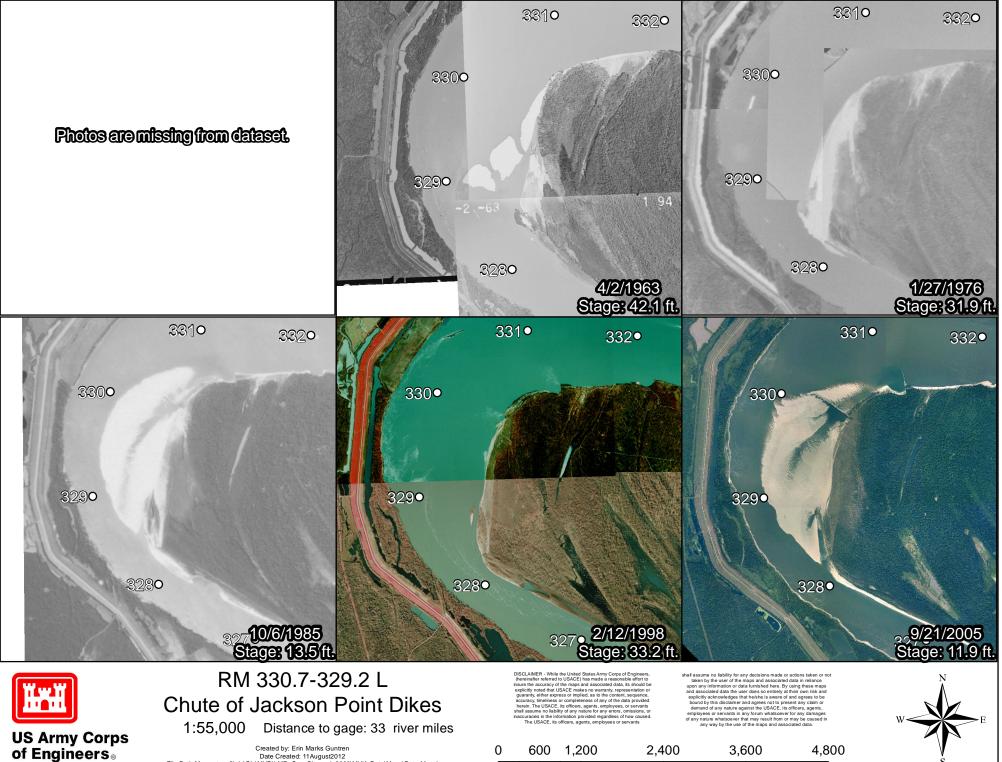


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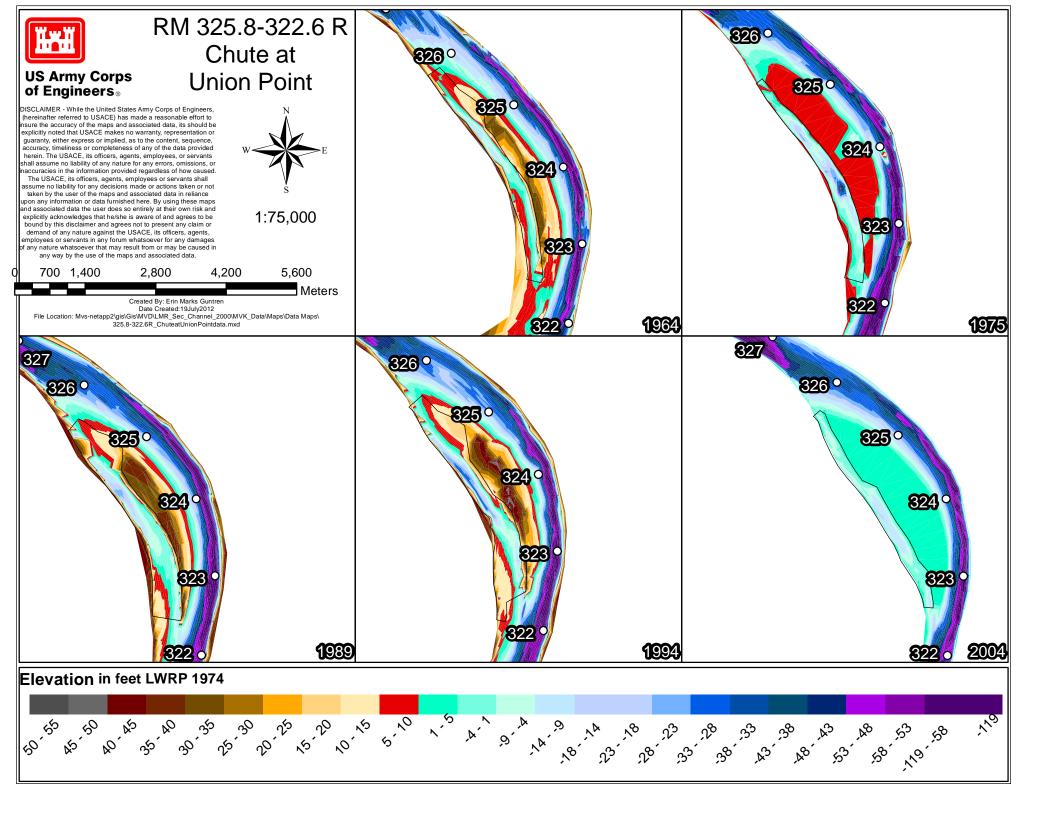


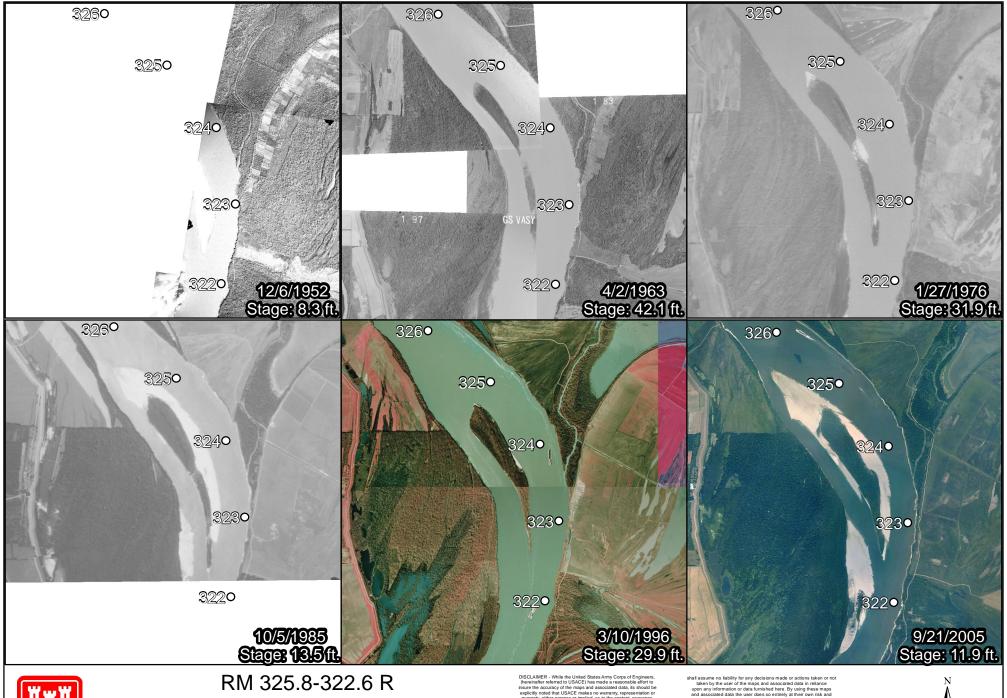




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Chute at UnionPoint

1:75,000 Distance to gage: 38 river miles

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3,200 4,800 6,400 800 1,600 Meters

Appendix N: Reach N – River Miles 324-275 New Orleans District

Eight secondary channels were identified in Reach N (see below). All eight secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table N1. Secondary channels and their upstream river mile for Reach N; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile
Chute at Fort Adams Landing	312.6L	Chute of Little Island	286.4L
Chute of Shreve's Bar	305.5L	Chute at Morgan's Bend	279.8L
Chute of Hog Point Dikes	301.0L		
Chute of Miles Bar Towhead	300.0R		
Chute Above Tunica Bend	294.8L		
Chute Opposite Como Landing	292.5R		

Reach Summary

Table N2. Sum of Reach N area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yd ³)		
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	10	70	230	500	376,000	4,413,000
1975	100%	340	450	830	1,090	6,776,000	20,083,000
1992	100%	420	560	820	1,220	16,486,000	30,112,000
2004	100%	200	400	710	1,070	6,054,000	17,478,000

Table N3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach N. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Voor	Cura		Area	(Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at Fort Adams Landing	312.6- 312L	1964	100%	0	0	0	0	0	0
Chute at Fort Adams Landing	312.6- 312L	1975	100%	60	80	110	170	1,128,000	3,066,000
Chute at Fort Adams Landing	312.6- 312L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fort Adams Landing	312.6- 312L	1992	100%	60	140	260	360	1,185,000	5,249,000
Chute at Fort Adams Landing	312.6- 312L	2004	100%	0	0	0	10	0	37,000
Chute of Shreve's Bar	305.5- 302.8L	1964	100%	10	20	70	150	207,000	1,391,000
Chute of Shreve's Bar	305.5- 302.8L	1975	100%	50	80	150	190	1,174,000	3,468,000
Chute of Shreve's Bar	305.5- 302.8L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Shreve's Bar	305.5- 302.8L	1992	100%	130	140	180	280	4,532,000	7,664,000
Chute of Shreve's Bar	305.5- 302.8L	2004	100%	40	160	250	330	950,000	4,982,000
Chute of Hog Point Dikes	301- 297.2L	1964	100%	0	20	50	60	83,000	862,000
Chute of Hog Point Dikes	301- 297.2L	1975	100%	220	260	480	560	4,327,000	11,955,000
Chute of Hog Point Dikes	301- 297.2L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Hog Point Dikes	301- 297.2L	1992	100%	0	0	0	0	0	0
Chute of Hog Point Dikes	301- 297.2L	2004	100%	30	50	90	210	778,000	2,448,000
Chute of Miles Bar Towhead	300- 298R	1964	100%	0	20	70	110	73,000	1,200,000
Chute of Miles Bar Towhead	300- 298R	1975	100%	0	10	20	30	74,000	400,000
Chute of Miles Bar Towhead	300- 298R	1983	100%	0	0	0	0	0	0
Chute of Miles Bar Towhead	300- 298R	2004	100%	130	170	260	330	4,280,000	8,396,000

Casandan Obannal	River	Voor	0		Area	Volume (yd³)			
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Miles Bar Towhead	294.8- 293.4L	1964	100%	0	0	0	10	0	43,000
Chute Above Tunica Bend	294.8- 293.4L	1975	100%	0	10	50	90	60,000	849,000
Chute Above Tunica Bend	294.8- 293.4L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Above Tunica Bend	294.8- 293.4L	1992	100%	0	0	40	150	12,000	852,000
Chute Above Tunica Bend	294.8- 293.4L	2004	100%	0	0	0	0	0	0
Chute Above Tunica Bend	292.5- 290.4R	1964	100%	0	0	0	0	0	0
Chute Opposite Como Landing	292.5- 290.4R	1975	100%	0	0	0	0	0	0
Chute Opposite Como Landing	292.5- 290.4R	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute Opposite Como Landing	292.5- 290.4R	1992	100%	10	20	50	70	139,000	911,000
Chute Opposite Como Landing	292.5- 290.4R	2004	100%	0	0	0	20	0	49,000
Chute Opposite Como Landing	286.4- 285.4L	1964	100%	0	0	40	160	14,000	916,000
Chute of Little Island	286.4- 285.4L	1975	100%	0	0	20	40	13,000	322,000
Chute of Little Island	286.4- 285.4L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Little Island	286.4- 285.4L	1992	100%	20	40	60	70	373,000	1,249,000
Chute of Little Island	286.4- 285.4L	2004	100%	0	20	110	170	46,000	1,566,000
Chute of Little Island	279.8- 279L	1964	100%	0	0	0	0	0	0
Chute at Morgan's Bend	279.8- 279L	1975	100%	0	0	0	20	0	23,000
Chute at Morgan's Bend	279.8- 279L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Morgan's Bend	279.8- 279L	1992	100%	0	0	0	0	0	0
Chute at Morgan's Bend	300- 298R	2004	100%	130	170	260	330	4,280,000	8,396,000
Chute at Morgan's Bend	279.8- 279L	2004	100%	0	0	0	0	0	0

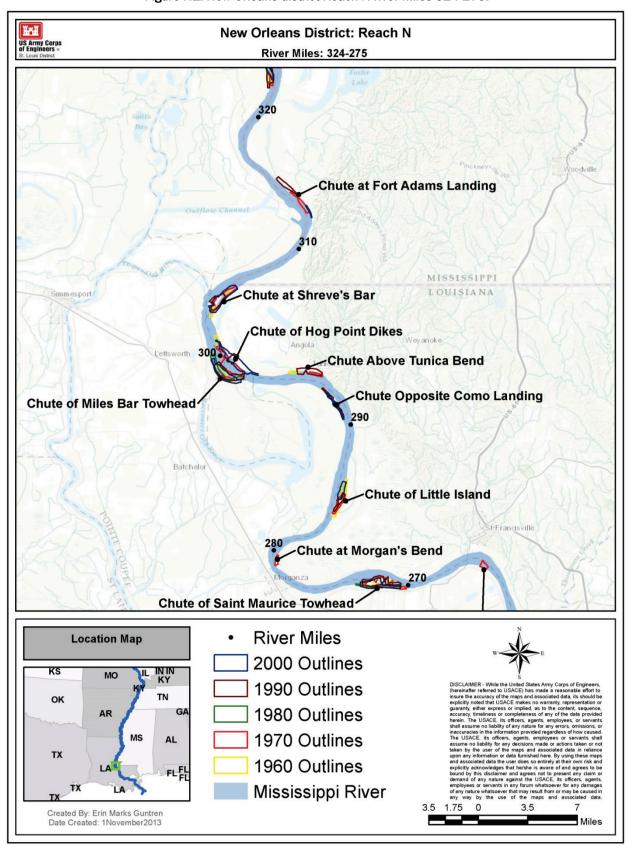
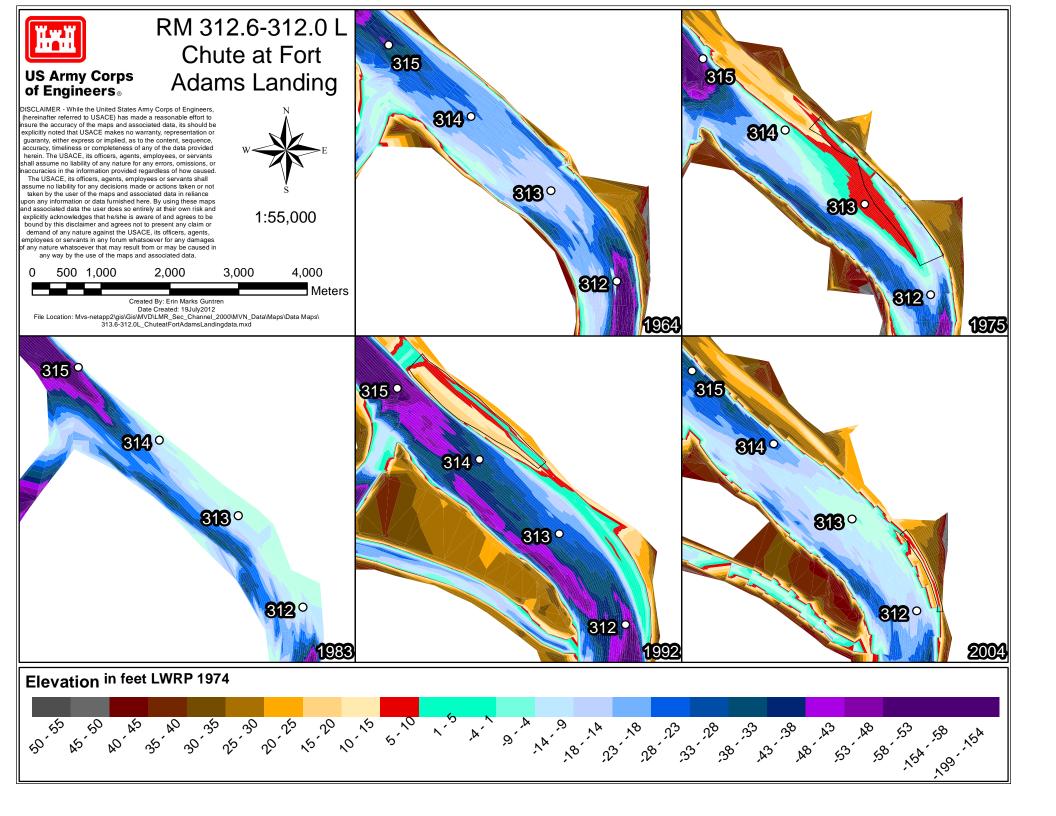
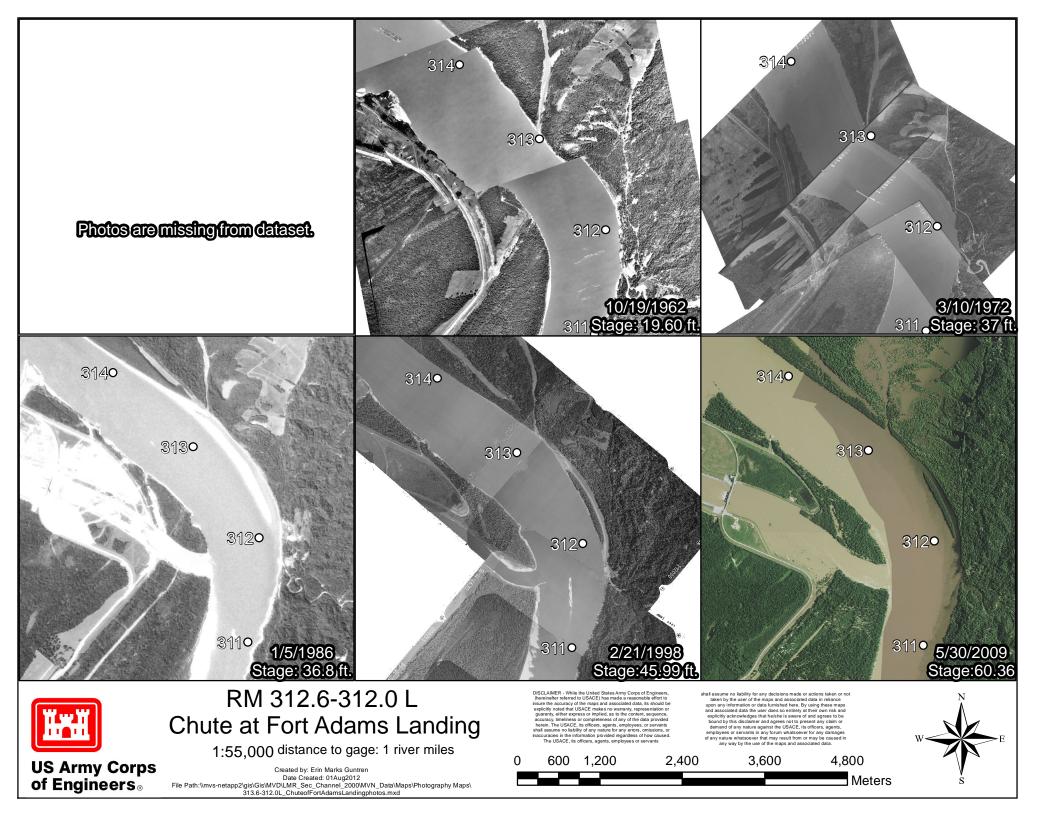


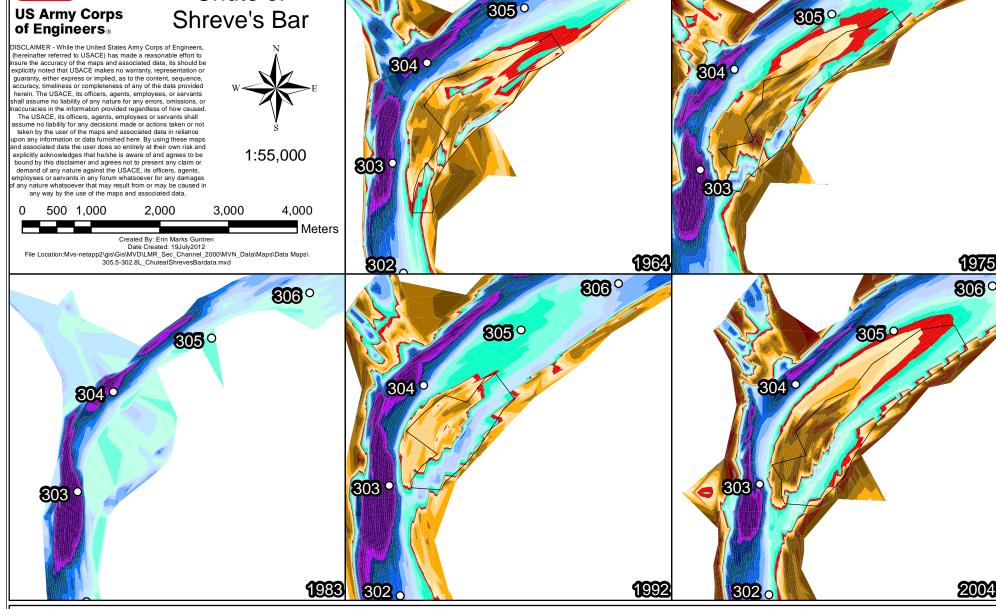
Figure N1. New Orleans district Reach N river miles 324-275.





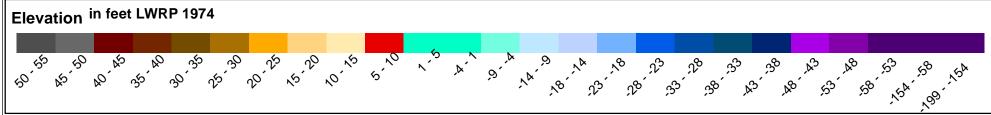
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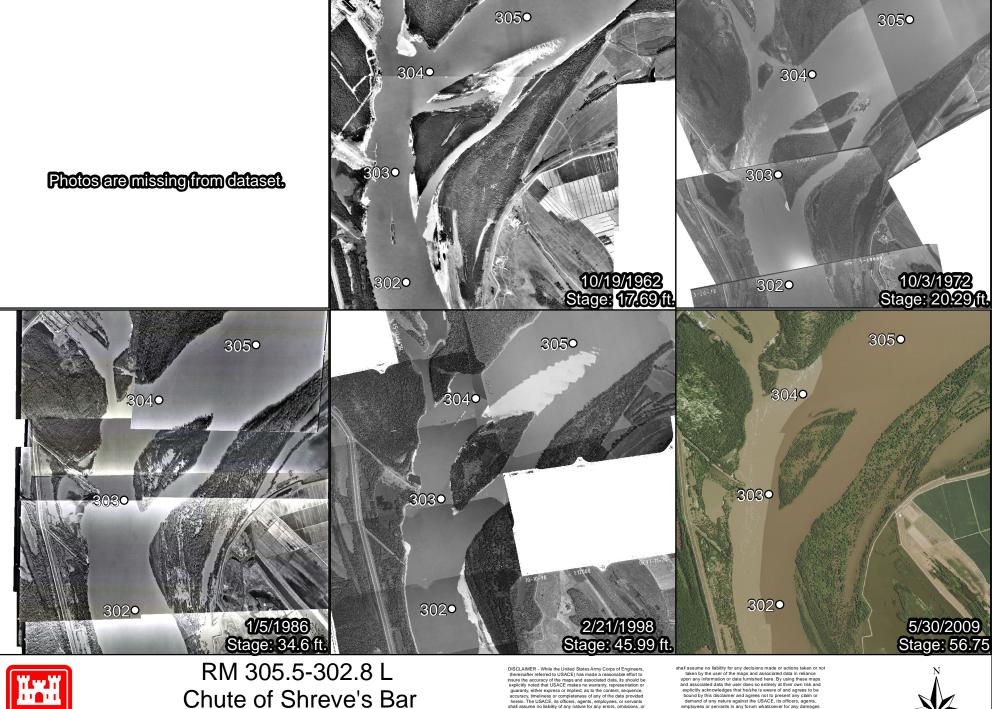
RM 305.5-302.8 L Chute of Shreve's Bar



306°

3060







Chute of Shreve's Bar

1:55,000

Distance to gage: 3 miles

1,200

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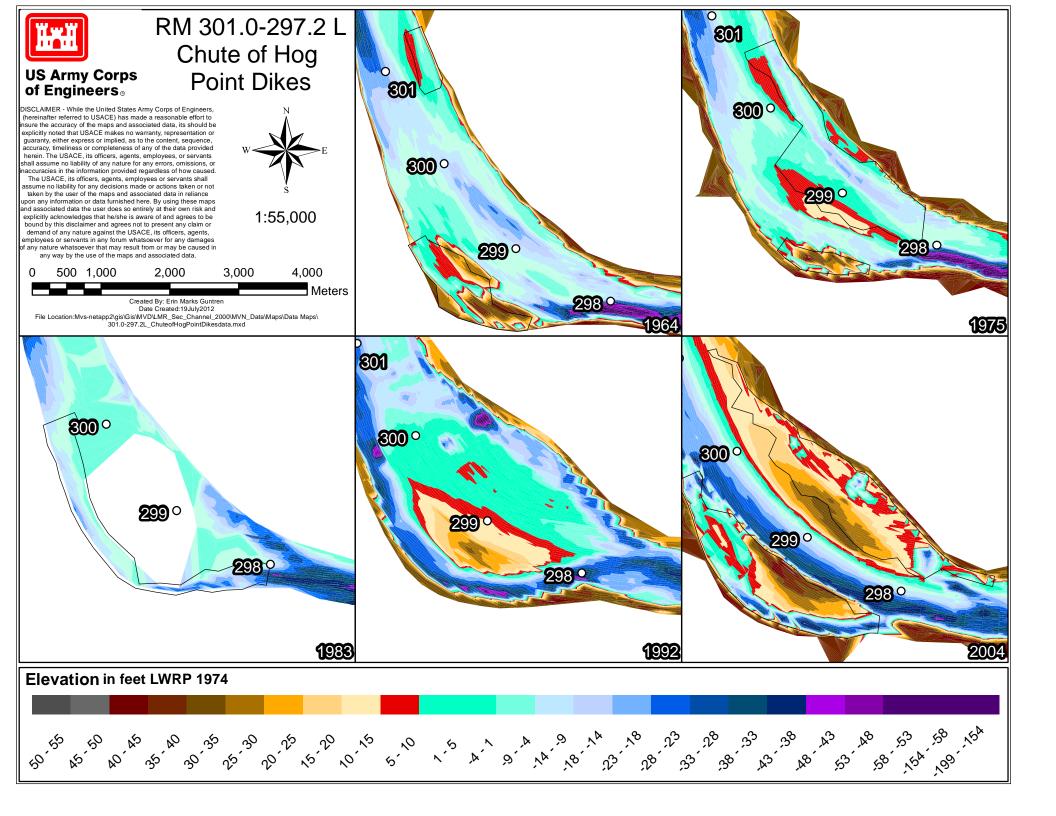


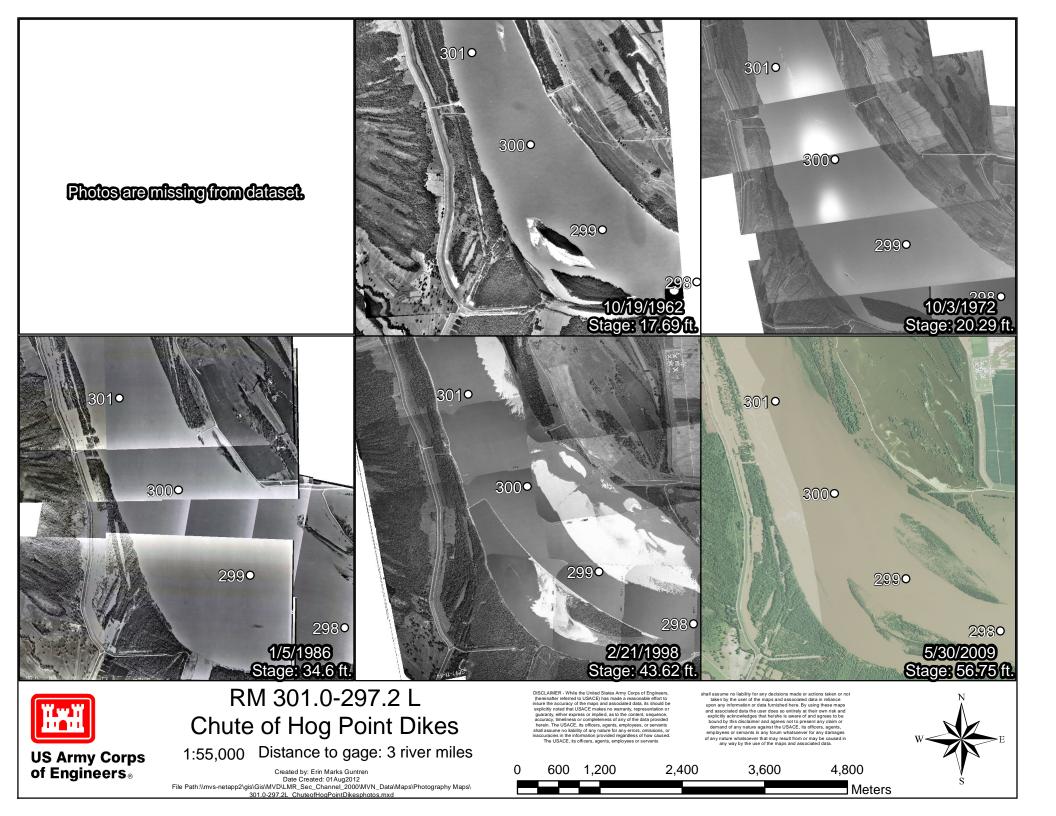
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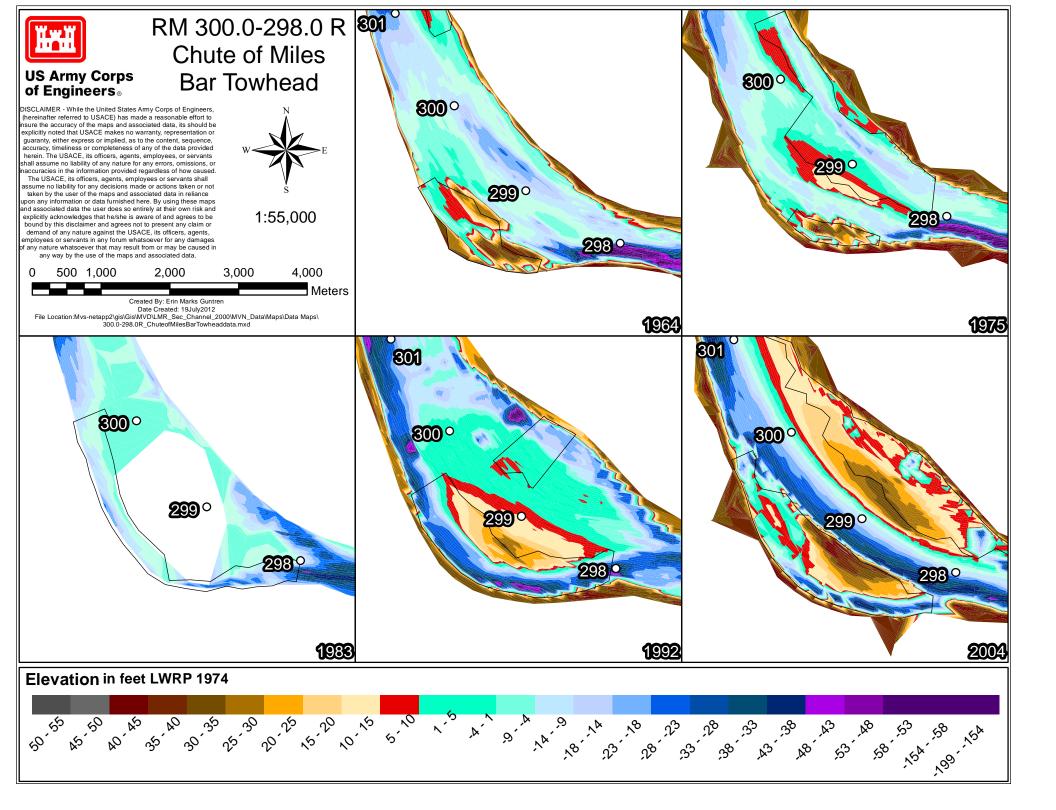
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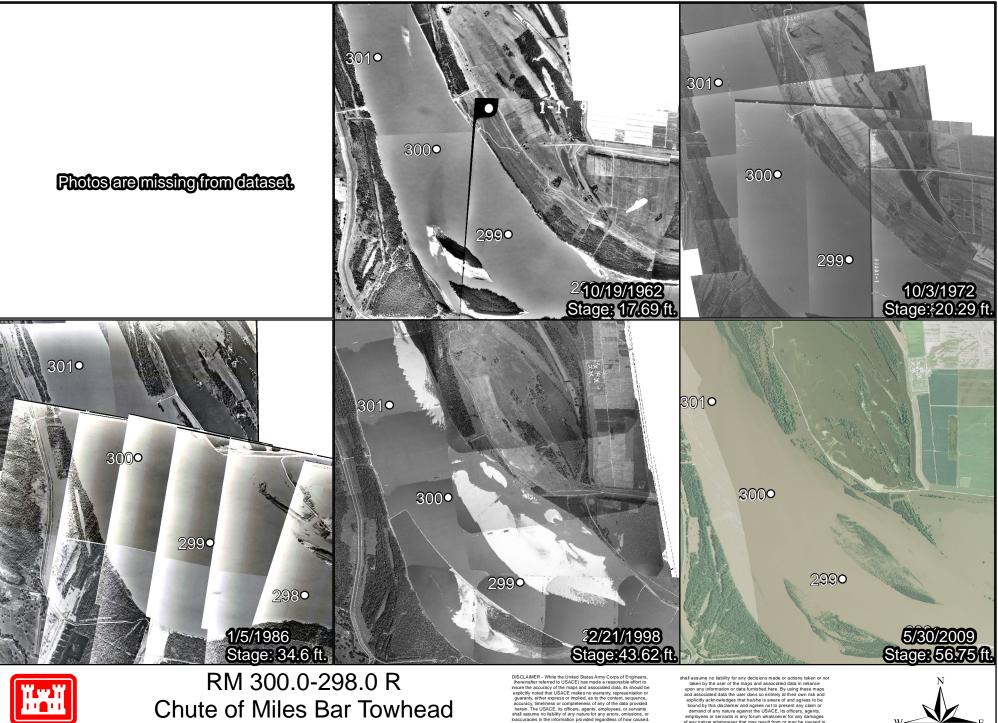
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Chute of Miles Bar Towhead

1:55,000

Distance to gage: 3 river miles

Created by: Erin Marks Guntren
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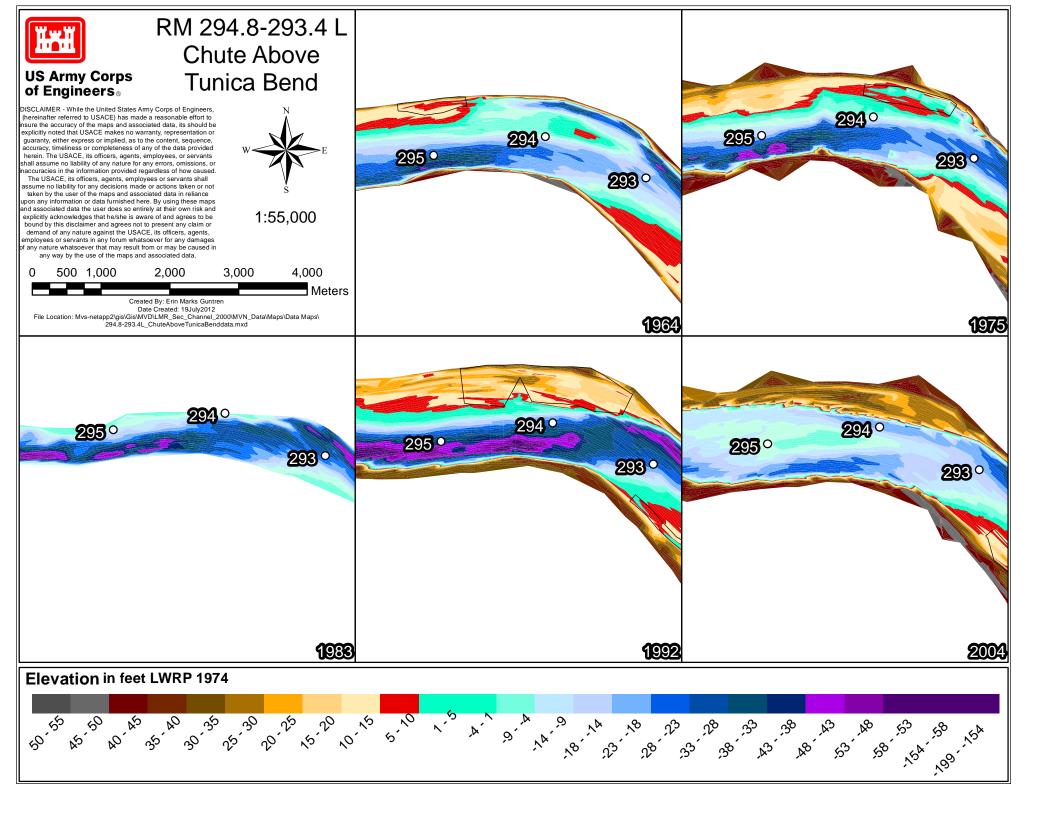
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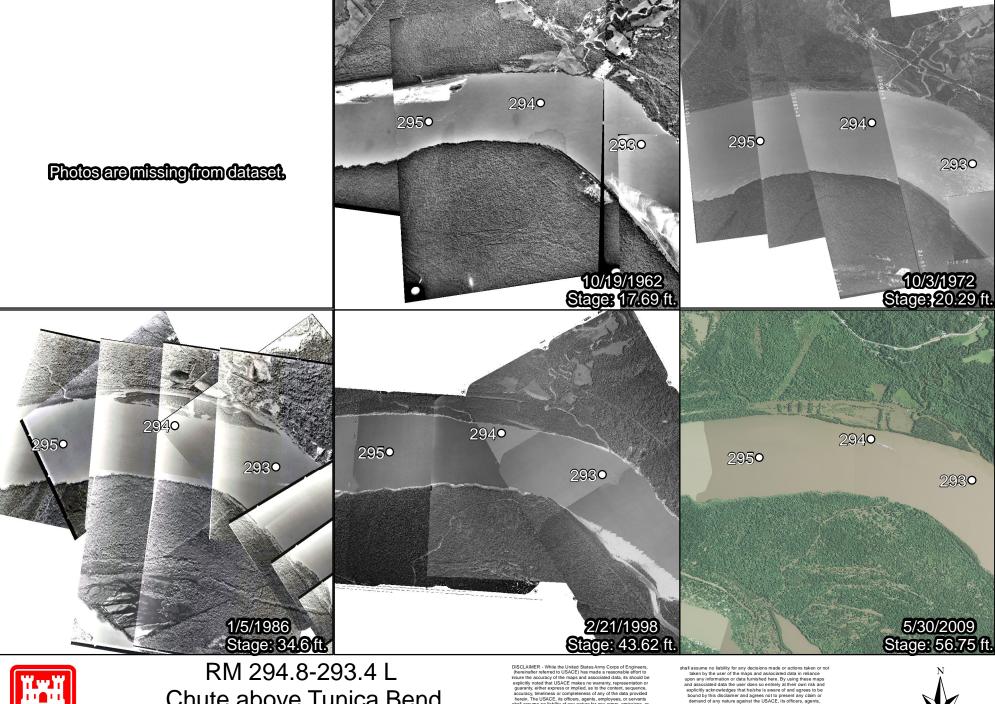
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Meters







Chute above Tunica Bend

1:55,000 Distance to gage: 8 river miles

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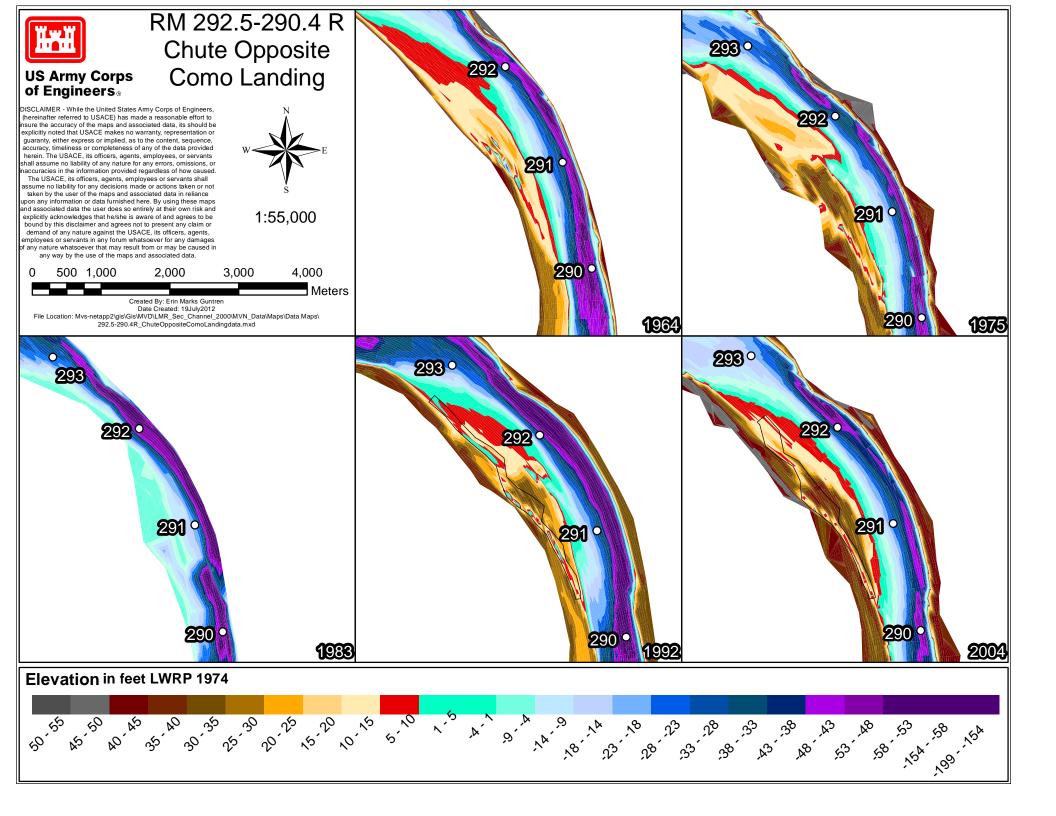


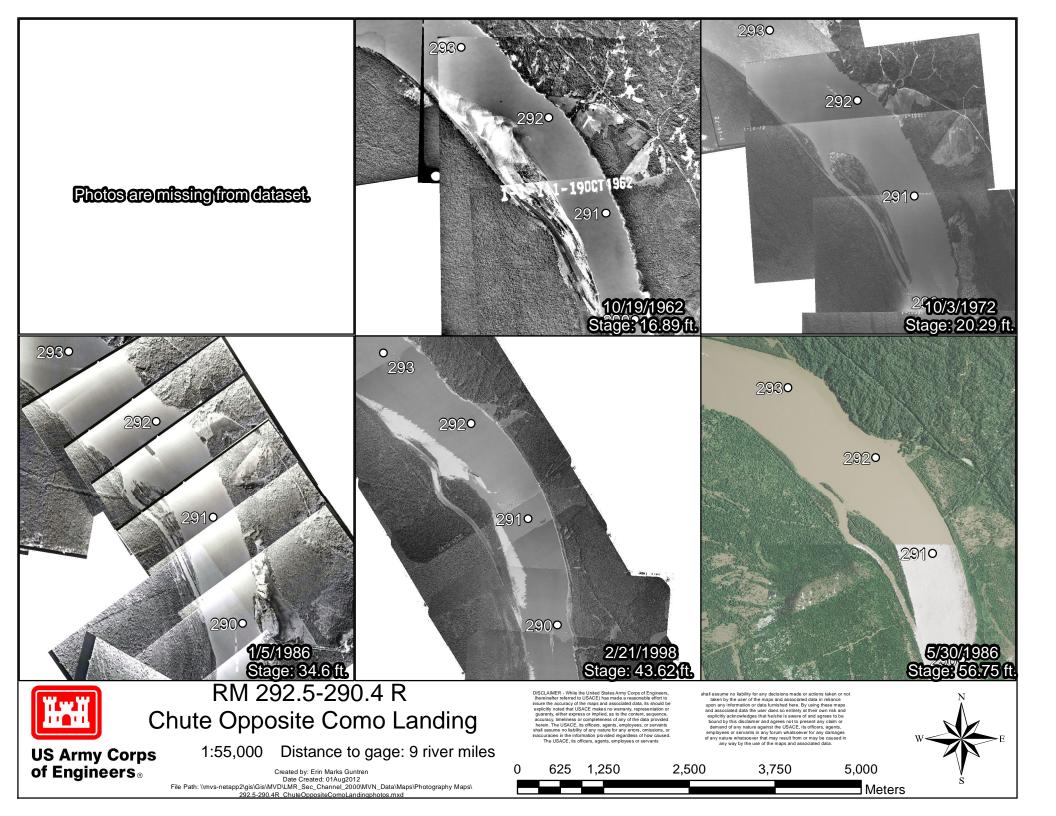
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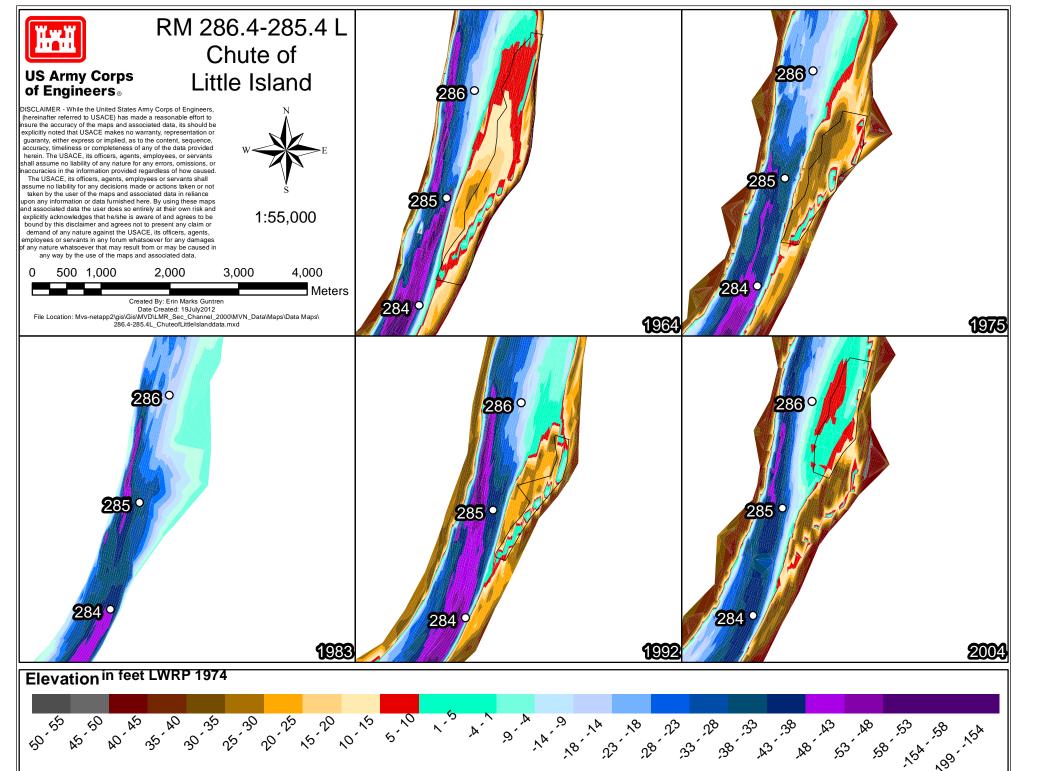
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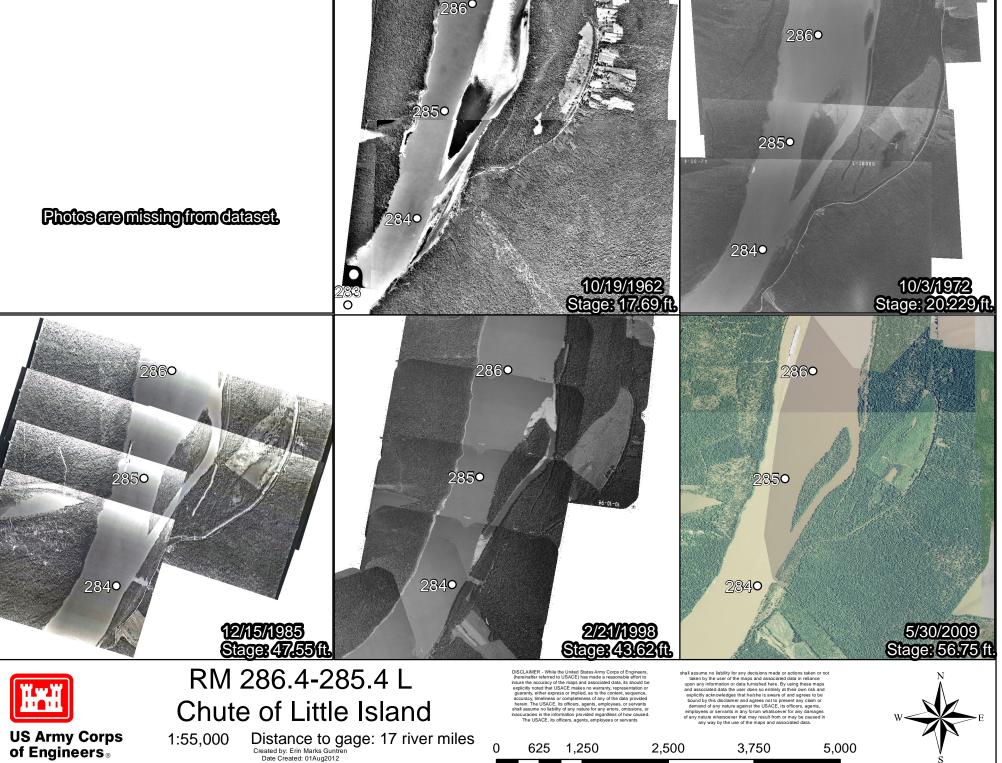
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US Army Corps of Engineers®

280°

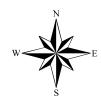
RM 279.8-279.0 L Chute at Morgan's Bend

282

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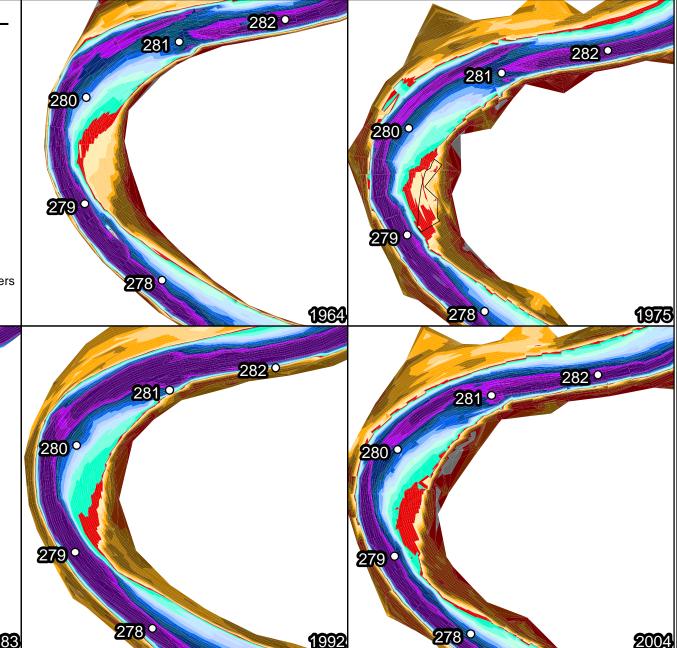


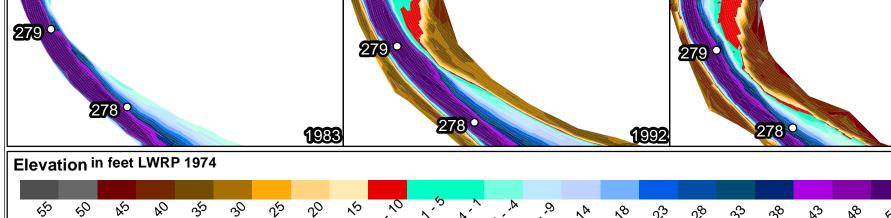
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279.8-279.0L ChuteatMorgansBenddata.mxd

281 °

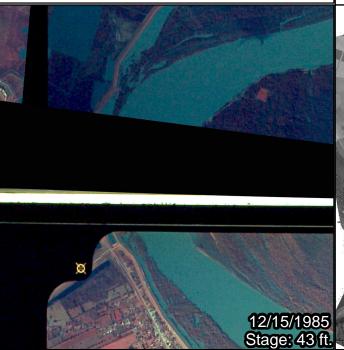


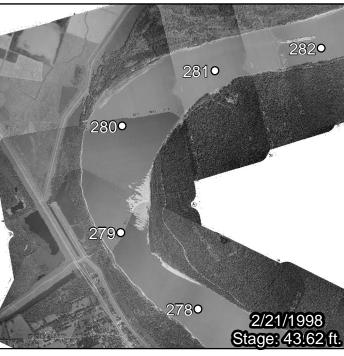


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RM 279.8-279.0 L Chute at Morgan's Bend

1:55,000 Disance to gage: 22 river miles

Created by: Erin Marks Guntren
Date Created: 10February2011

279.8-279.0L ChuteatMorgansBendphotos.mxd

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Appendix O: Reach O – River Miles 275-224 New Orleans District

Seven secondary channels were identified in Reach O (see below). All seven secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table O1. Secondary channels and their upstream river mile for Reach O; channels in bold were included in the Reach Summary.

Name	River Mile	Name	River Mile
Chute of St. Maurice Towhead	273.2R	Chute at Springfield Bend	245.4R
Chute at Bayou Sara Bend	265.1R		
Chute of Fancy Point Towhead	258.8L		
Chute at Fontania Landing	255.2L		
Chute at Kelson Landing	253.6R		
Chute of Profit Island	251.9L		

Reach Summary

Table O2. Sum of Reach O area and volume for channels that had data for all four decades.

Decades	Avg. % cvrg.		Areas	(acres)	Volume (yds3)		
		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	240	460	740	950	5,060,000	16,779,000
1975	100%	220	410	650	800	5,173,000	15,216,000
1992	100%	810	870	920	1,020	27,630,000	42,641,000
2004	100%	390	590	850	990	9,760,000	22,961,000

Table 03. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach 0. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

0	River			pstream		Acres)	Volume (yd³)		
Secondary Channel	Miles	Year	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of St. Maurice Towhead	273.2- 270.5R	1964	100%	60	140	190	270	1,195,000	4,382,000
Chute of St. Maurice Towhead	273.2- 270.5R	1975	100%	60	100	170	230	1,361,000	4,126,000
Chute of St. Maurice Towhead	273.2- 270.5R	1983	100%	150	230	230	230	3,083,000	6,792,000
Chute of St. Maurice Towhead	273.2- 270.5R	1992	100%	180	200	220	290	5,638,000	9,364,000
Chute of St. Maurice Towhead	273.2- 270.5R	2004	100%	130	180	230	270	2,539,000	6,161,000
Chute at Bayou Sara Bend	265.1- 264.6R	1964	100%	0	0	0	0	0	0
Chute at Bayou Sara Bend	265.1- 264.6R	1975	100%	0	0	60	80	0	700,000
Chute at Bayou Sara Bend	265.1- 264.6R	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Bayou Sara Bend	265.1- 264.6R	1992	100%	0	0	0	0	0	0
Chute at Bayou Sara Bend	265.1- 264.6R	2004	100%	0	0	0	0	0	0
Chute of Fancy Point Towhead	258.8- 256.3L	1964	100%	10	50	130	180	352,000	2,272,000
Chute of Fancy Point Towhead	258.8- 256.3L	1975	100%	10	80	130	150	432,000	2,432,000
Chute of Fancy Point Towhead	258.8- 256.3L	1983	100%	100	160	160	160	1,411,000	3,936,000
Chute of Fancy Point Towhead	258.8- 256.3L	1992	100%	130	150	160	170	2,346,000	4,946,000
Chute of Fancy Point Towhead	258.8- 256.3L	2004	100%	0	10	120	180	13,000	1,722,000
Chute at Fontania Landing	255.2- 254.9L	1964	100%	0	10	10	20	197,000	430,000
Chute at Fontania Landing	255.2- 254.9L	1975	100%	0	0	0	0	0	0
Chute at Fontania Landing	255.2- 254.9L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Fontania Landing	255.2- 254.9L	1992	100%	0	0	0	0	0	0

Secondary Channel	River	Year	Cvrg.		Area (Acres)	Volume (yd³)		
	Miles	Teal		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at Fontania Landing	255.2- 254.9L	2004	100%	0	0	0	0	0	0
Chute at Kelson Landing	253.6- 252.3R	1964	100%	0	20	50	70	51,000	836,000
Chute at Kelson Landing	253.6- 252.3R	1975	100%	0	0	0	0	0	0
Chute at Kelson Landing	253.6- 252.3R	1983	100%	0	0	0	0	0	0
Chute at Kelson Landing	253.6- 252.3R	1992	100%	0	0	0	0	0	0
Chute at Kelson Landing	253.6- 252.3R	2004	100%	0	0	0	0	0	0
Chute of Profit Island	251.9- 246.8L	1964	100%	160	260	330	360	3,266,000	8,539,000
Chute of Profit Island	251.9- 246.8L	1975	100%	150	220	290	340	3,379,000	7,959,000
Chute of Profit Island	251.9- 246.8L	1983	100%	400	420	420	420	14,537,000	21,331,000
Chute of Profit Island	251.9- 246.8L	1992	100%	500	520	540	560	19,646,000	28,331,000
Chute of Profit Island	251.9- 246.8L	2004	100%	250	400	500	540	7,208,000	15,078,000
Chute at Springfield Bend	245.4- 244.5R	1964	100%	0	0	20	40	0	320,000
Chute at Springfield Bend	245.4- 244.5R	1975	100%	0	0	0	0	0	0
Chute at Springfield Bend	245.4- 244.5R	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at Springfield Bend	245.4- 244.5R	1992	100%	0	0	0	0	0	0
Chute at Springfield Bend	245.4- 244.5R	2004	100%	0	0	0	0	0	0

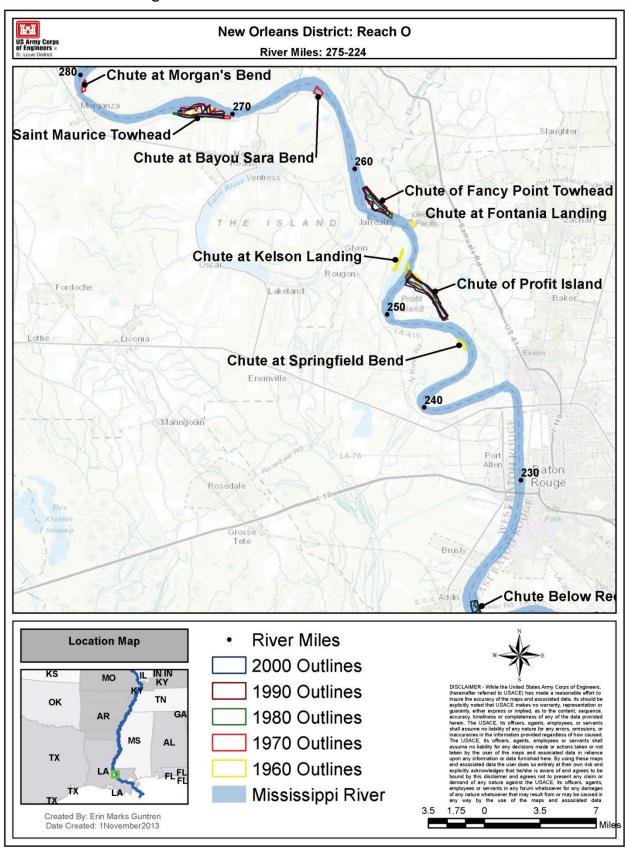
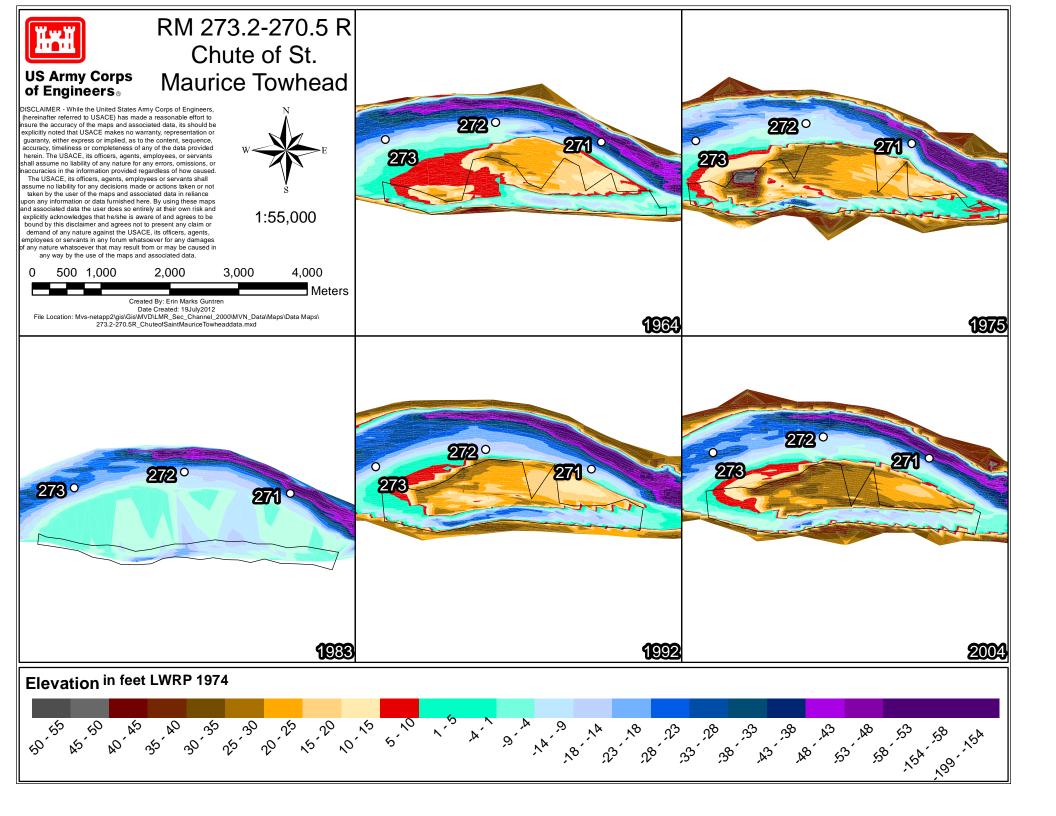
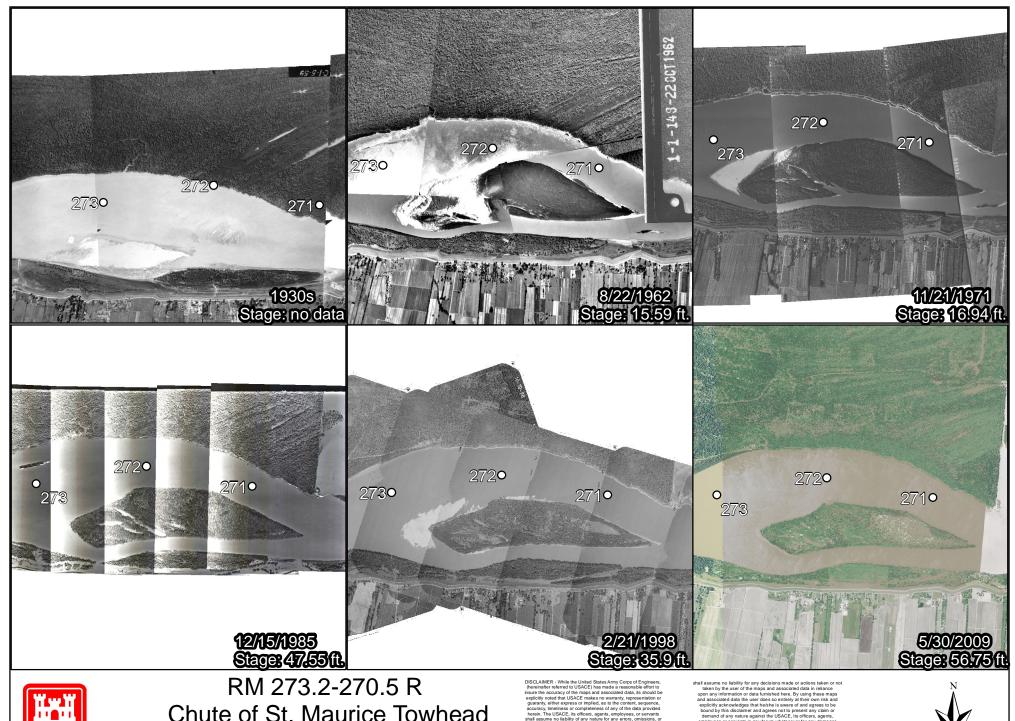


Figure 01. New Orleans district Reach O river miles 275-224.





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Chute of St. Maurice Towhead

1:55,000 Distance to gage: 12 miles

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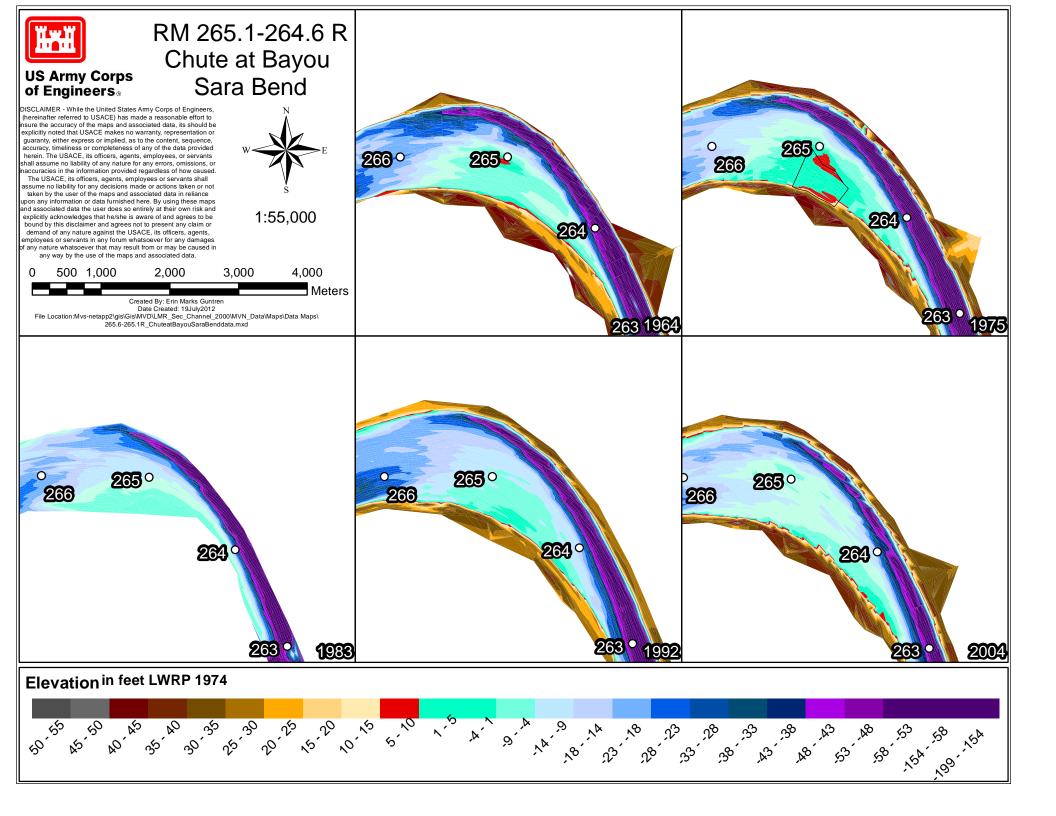
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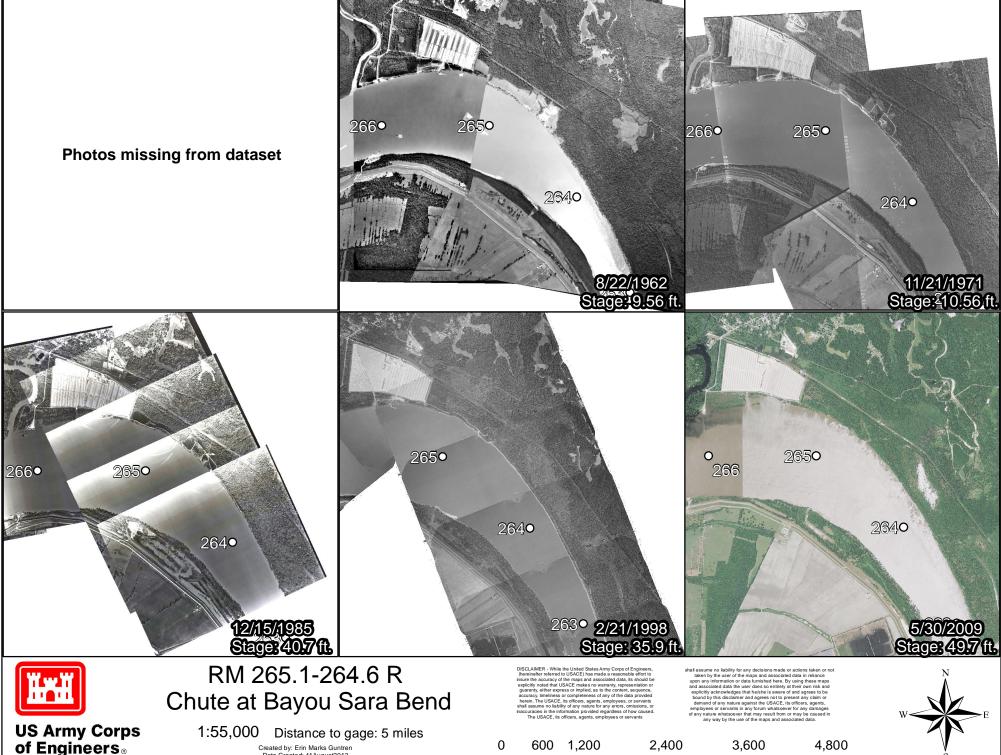
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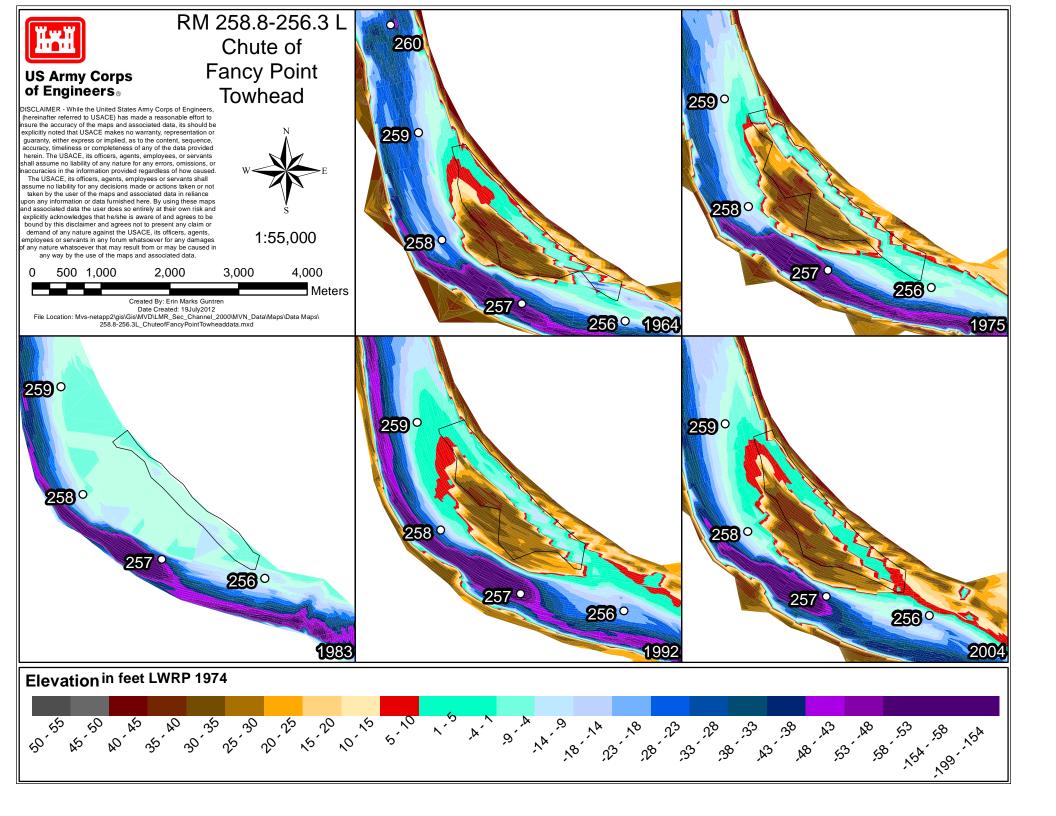
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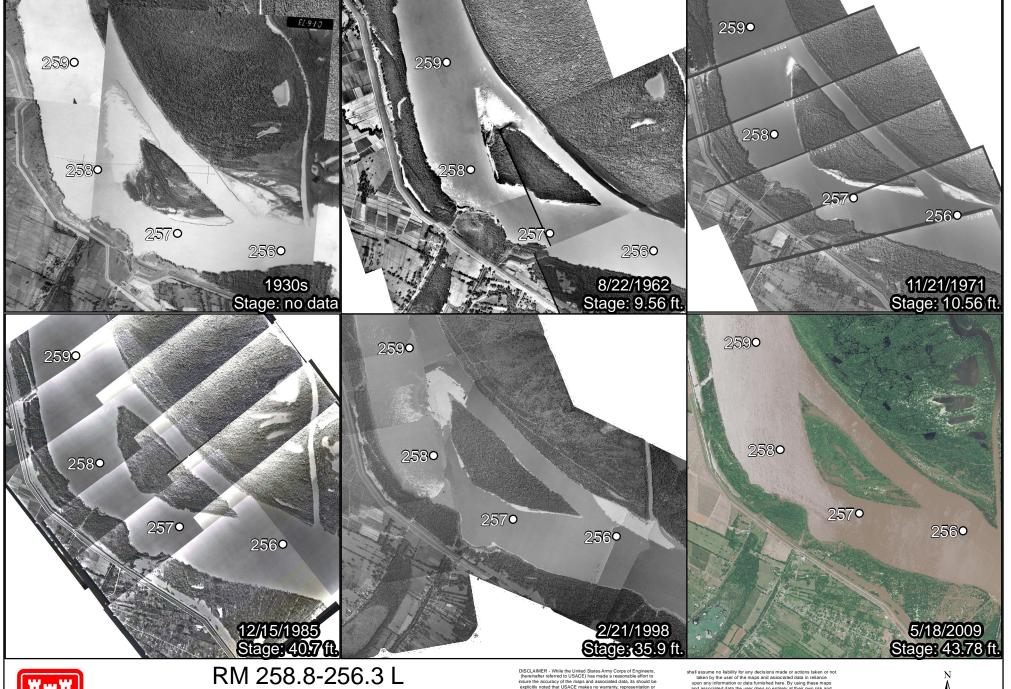




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RM 258.8-256.3 L Chute of Fancy Point Towhead

1:55,000

Distance to gage: 2 miles

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Date Created: 11August2012
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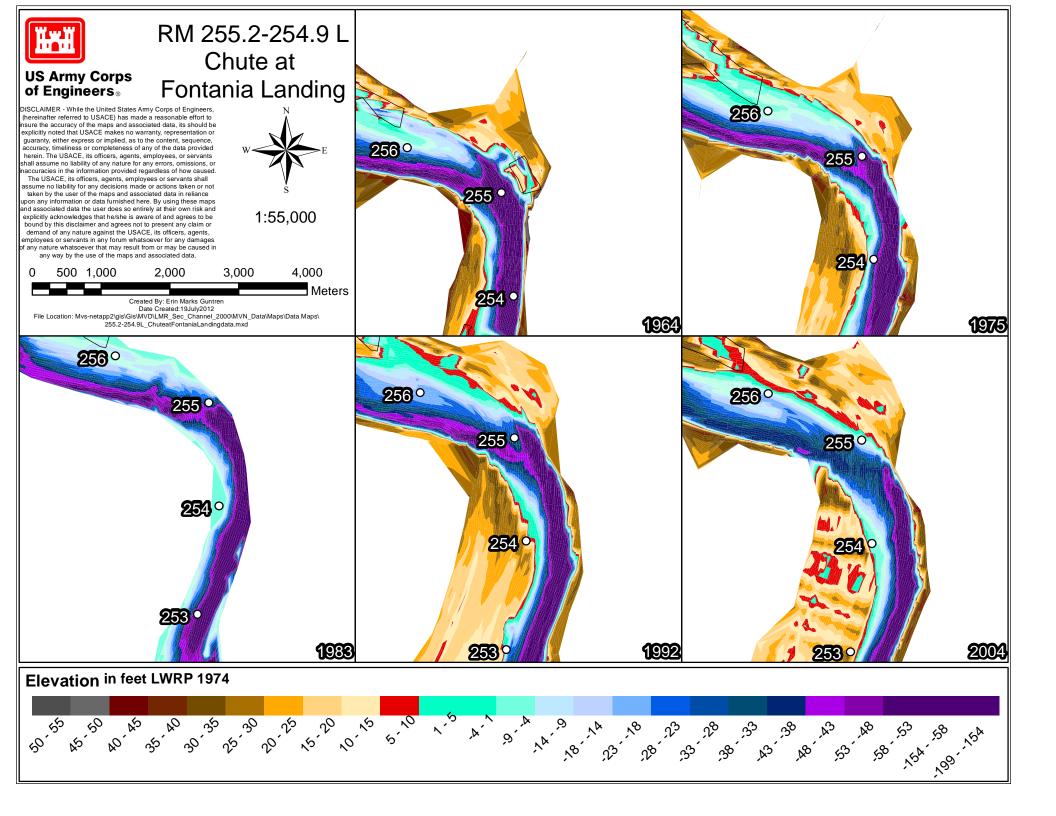
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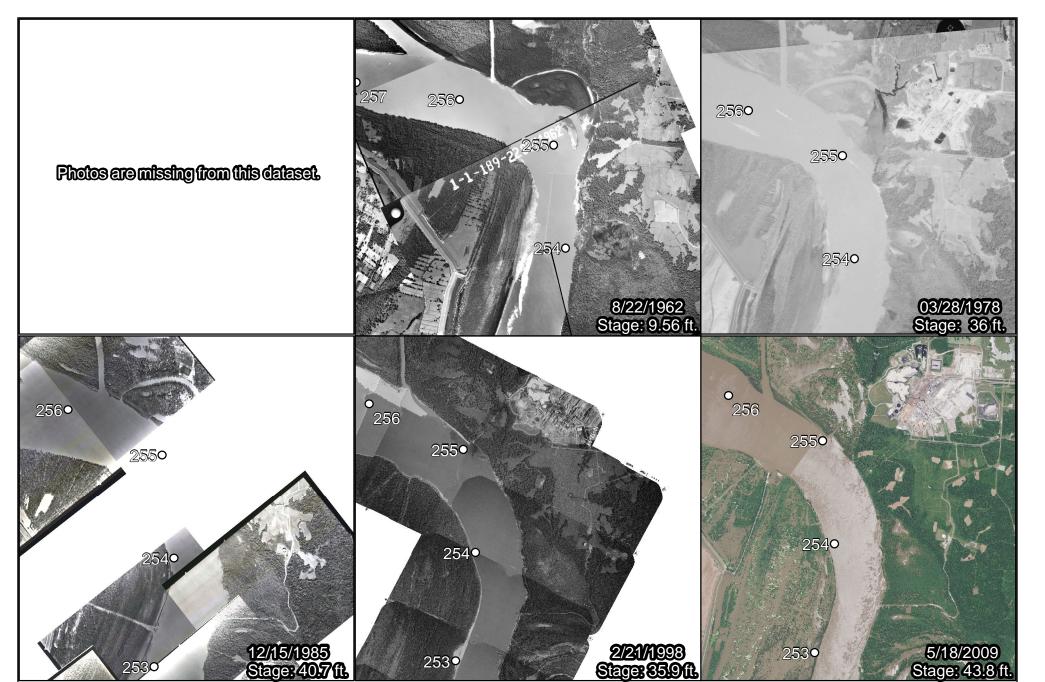


600 1,200 2,400 3,600

Meters

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RM 255.2-254.9 L Chute at Fontania Landing

1:55,000 Distance to gage: 5 miles

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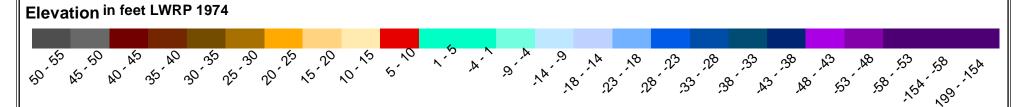
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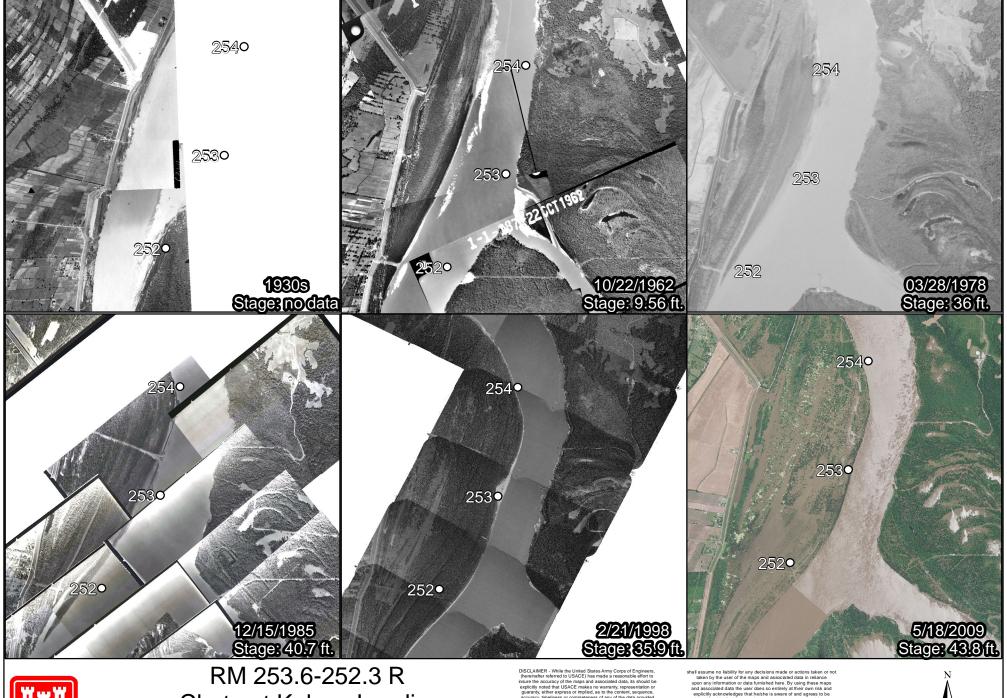
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RM 253.6-252.3 R Chute at US Army Corps of Engineers_® **Kelson Landing** DISCLAIMER - While the United States Army Corps of Engineers, (hereinafter referred to USACE) has made a reasonable effort to nsure the accuracy of the maps and associated data, its should be explicitly noted that USACE makes no warranty, representation or guaranty, either express or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or accuracies in the information provided regardless of how caused. The USACE, its officers, agents, employees or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and 1:55,000 explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees or servants in any forum whatsoever for any damages f any nature whatsoever that may result from or may be caused in any way by the use of the maps and associated data. 500 1,000 2,000 3,000 4,000 Meters 252° Created By: Erin Marks Guntrer Date Created: 19July2012 File Location: Mvs-netapp2\gis\Gis\MVD\LMR_Sec_Channel_2000\MVN_Data\Maps\Data Maps\ 1964 253.6-252.3R_ChuteatKelsonLandingdata.mxd 254 **254**° 253 **253** ° 252 252° 1992 1983

1975

2004







Chute at Kelson Landing

1:55,000 Distance to gage: 7 miles

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Meters

US Army Corps of Engineers_®

RM 251.9-246.8 L Chute of **Profit Island**

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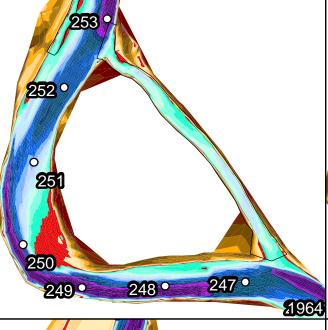


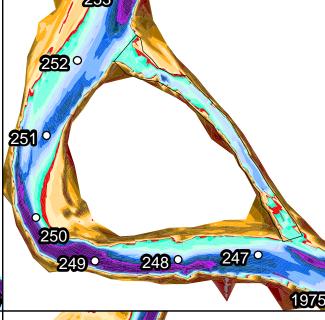
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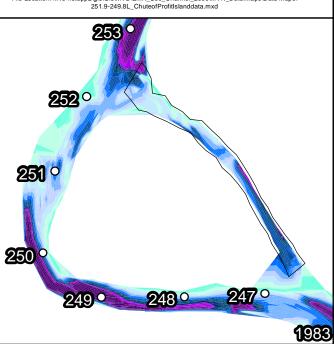
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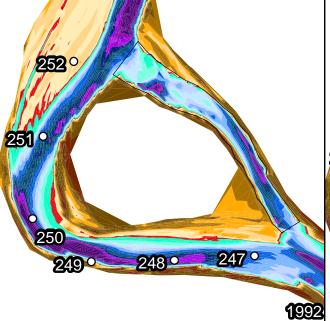


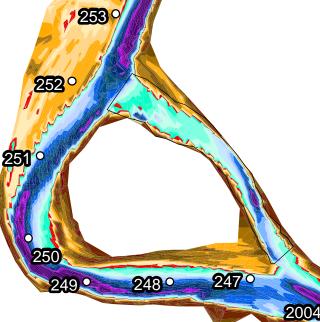
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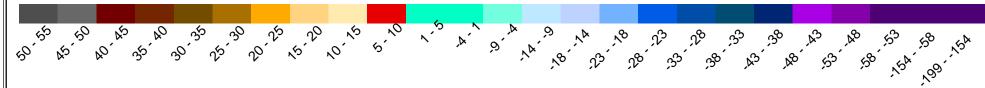


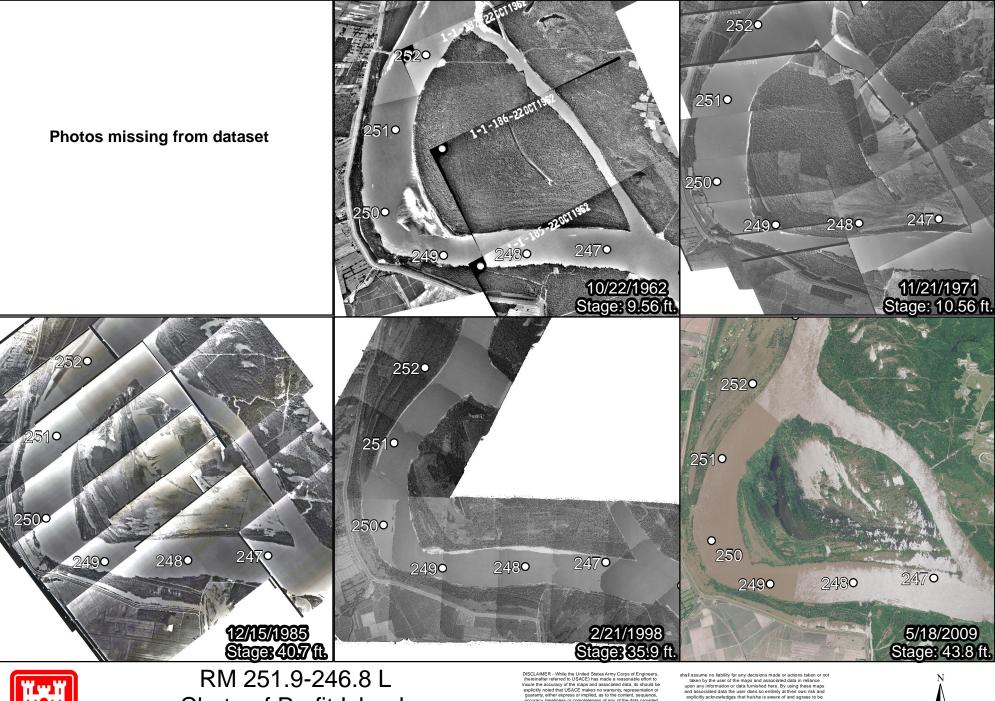






Elevation in feet LWRP 1974







Chute of Profit Island

1:75,000 Distance to gage: 9 miles

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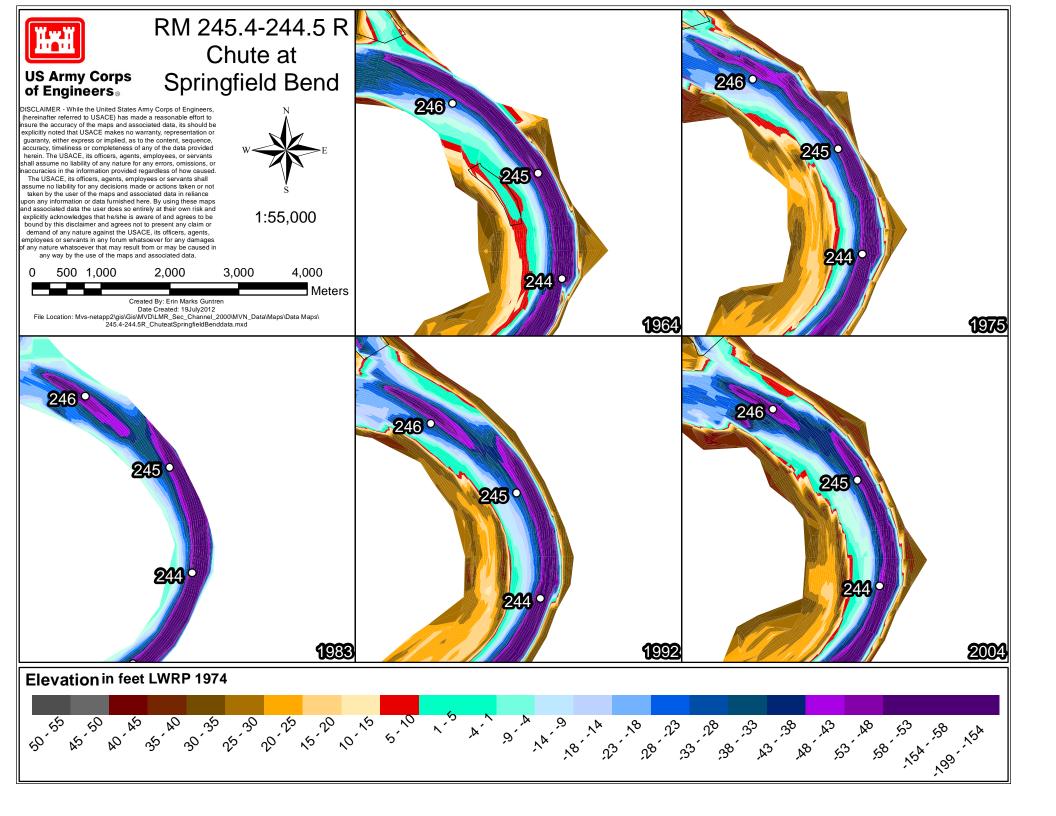
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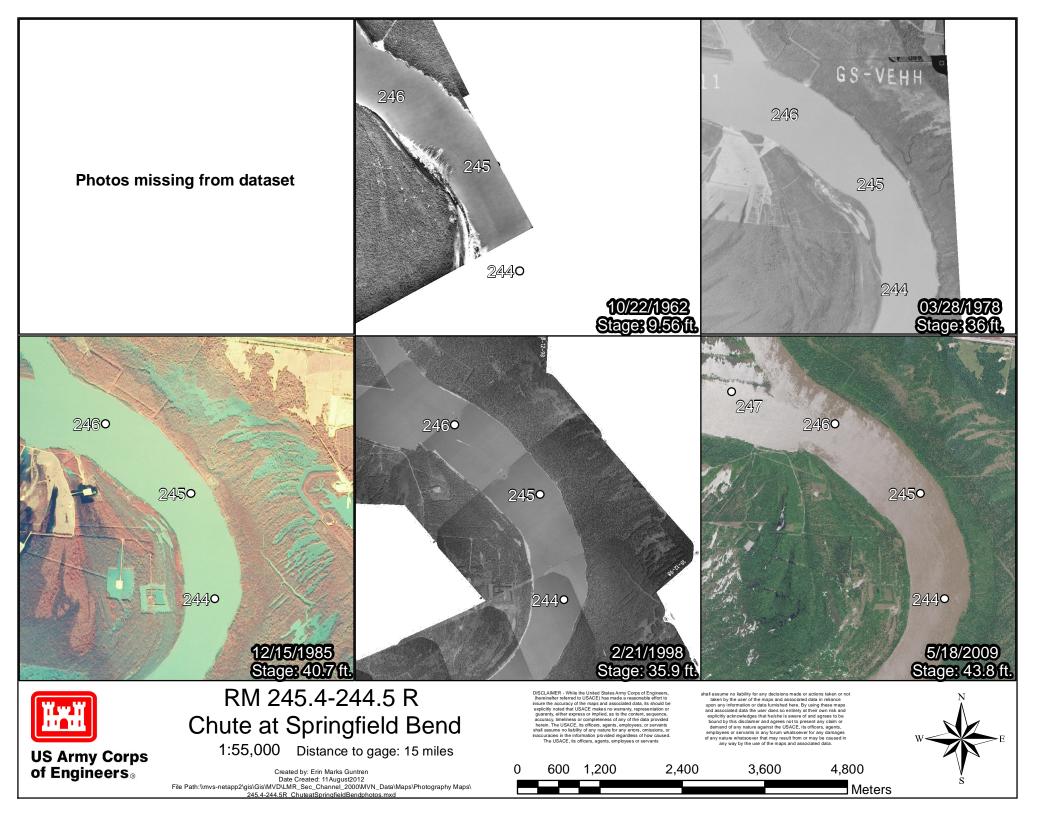
3,500

5,250

7,000

Meters





Appendix P: Reach P – River Miles 224-174 New Orleans District

Five secondary channels were identified in Reach P (see below). All five secondary channels were surveyed in all four decades and are included in the Reach Summary.

Table P1. Secondary channels and their upstream river mile for Reach P; channels in bold were included in the Reach Summary.

Name	River Mile
Chute Below Red Eye Dikes	222.7L
Chute at Manchac Bend	217.3R
Chute at Plaquemine Bend	211.2L
Chute of Bayou Goula Towhead	196.4L
Chute at Clairborne Landing	188.6R

Reach Summary

Table P2. Sum of Reach P area and volume for channels that had data for all four decades.

Decades	Avg. %		Areas	(acres)	Volume (yds3)		
Decades	cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
1964	100%	150	200	250	310	3,005,000	7,051,000
1975	100%	170	240	320	410	4,064,000	9,332,000
1992	100%	240	280	310	330	6,658,000	11,720,000
2004	100%	220	290	350	400	5,941,000	11,579,000

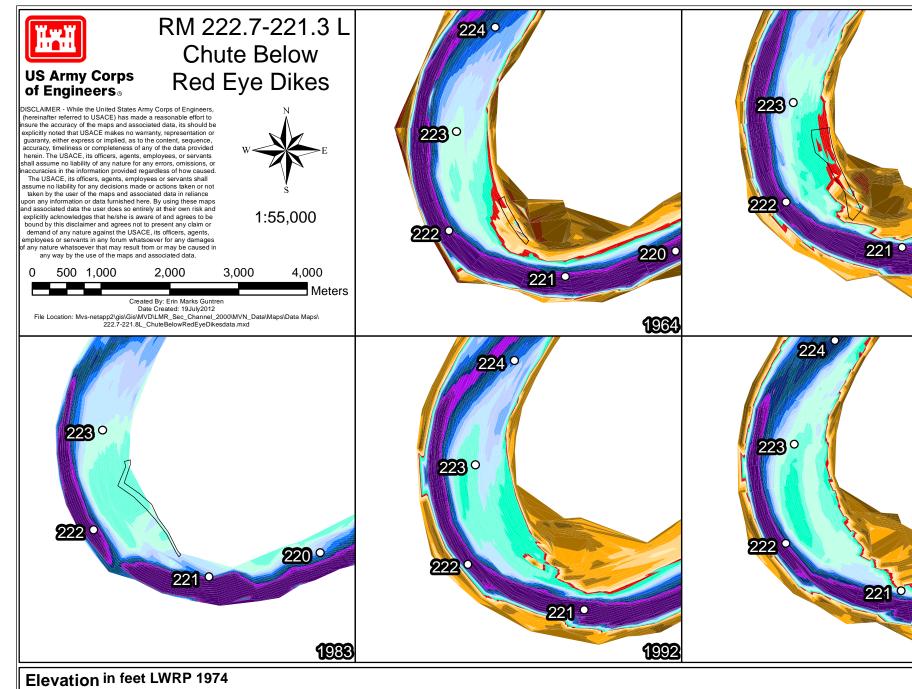
Table P3. The name, river miles, year of data collection, data coverage, area, and volume of all secondary channels identified within Reach P. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some cases, there was no survey (no bath), the survey did not cover the secondary channel (insufficient data), or the channel became part of another channel (upper river mile of that channel, e.g. 433.9R). River miles are the upstream and downstream ends of the most recent outline.

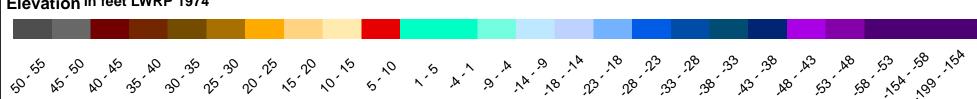
Secondary Channel	River	Year	Cvrg.	Area (Acres)				Volume (yd³)		
Secondary Charmer	Miles	ICai	Cvig.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute Below Red Eye Dikes	222.7- 221.3L	1964	100%	0	0	0	0	0	24,000	
Chute Below Red Eye Dikes	222.7- 221.3L	1975	100%	0	0	20	40	6,000	315,000	
Chute Below Red Eye Dikes	222.7- 221.3L	1983	100%	10	30	30	30	175,000	657,000	
Chute Below Red Eye Dikes	222.7- 221.3L	1992	100%	0	0	0	0	0	0	
Chute Below Red Eye Dikes	222.7- 221.3L	2004	100%	0	0	0	0	0	0	
Chute at Manchac Bend	217.3- 215.5R	1964	100%	0	0	10	30	0	215,000	
Chute at Manchac Bend	217.3- 215.5R	1975	100%	0	0	10	20	2,000	130,000	
Chute at Manchac Bend	217.3- 215.5R	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute at Manchac Bend	217.3- 215.5R	1992	100%	0	0	0	0	0	0	
Chute at Manchac Bend	217.3- 215.5R	2004	100%	0	0	0	0	0	0	
Chute at Plaquemine Bend	211.2- 209.8L	1964	100%	90	110	120	140	2,057,000	4,047,000	
Chute at Plaquemine Bend	211.2- 209.8L	1975	100%	90	120	150	180	2,464,000	4,834,000	
Chute at Plaquemine Bend	211.2- 209.8L	1983	100%	100	140	150	150	2,427,000	4,783,000	
Chute at Plaquemine Bend	211.2- 209.8L	1992	100%	120	140	160	170	3,385,000	5,990,000	
Chute at Plaquemine Bend	211.2- 209.8L	2004	100%	90	130	170	200	1,907,000	4,599,000	
Chute of Bayou Goula Towhead	196.4- 194.4L	1964	100%	60	90	110	130	949,000	2,764,000	
Chute of Bayou Goula Towhead	196.4- 194.4L	1975	100%	80	130	150	170	1,592,000	4,053,000	
Chute of Bayou Goula Towhead	196.4- 194.4L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data	
Chute of Bayou Goula Towhead	196.4- 194.4L	1992	100%	120	140	150	160	3,273,000	5,730,000	

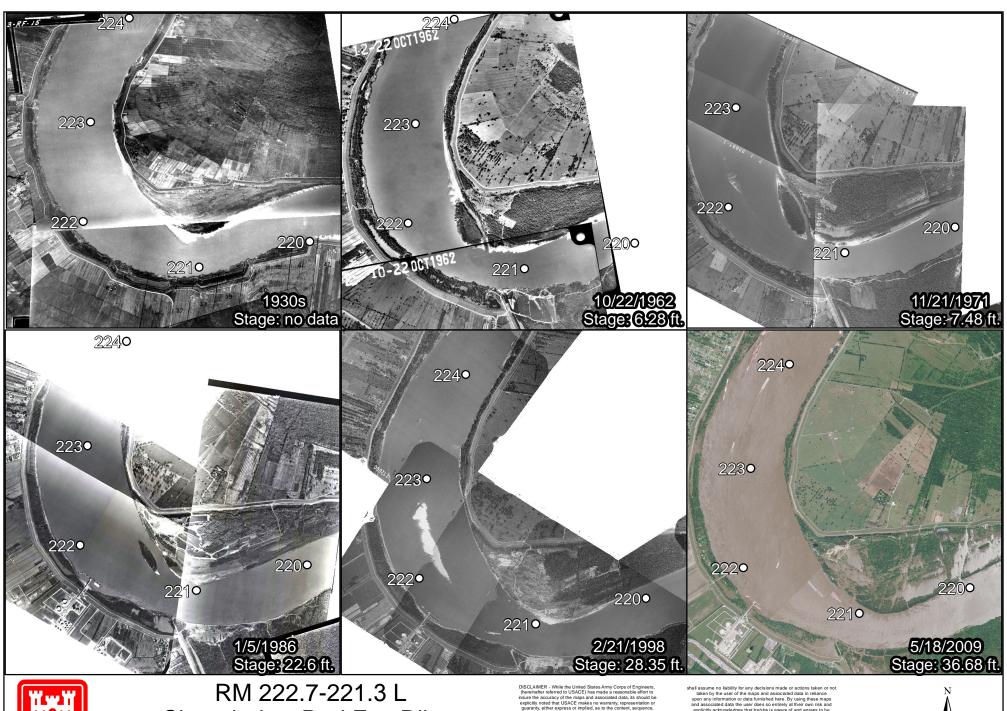
Secondary Channel	River	Year	Cvrg.	Area (Acres)				Volume (yd³)		
Secondary Charmer	Miles	Ibai		-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft	
Chute of Bayou Goula Towhead	196.4- 194.4L	2004	100%	140	160	180	200	4,033,000	6,980,000	
Chute at Clairborne Landing	188.6- 188.1R	1964	100%	0	0	0	0	0	0	
Chute at Clairborne Landing	188.6- 188.1R	1975	100%	0	0	0	0	0	0	
Chute at Clairborne Landing	188.6- 188.1R	1983	100%	0	30	30	30	168,000	704,000	
Chute at Clairborne Landing	188.6- 188.1R	1992	100%	0	0	0	0	0	0	
Chute at Clairborne Landing	188.6- 188.1R	2004	100%	0	0	0	0	0	0	

HH **New Orleans District: Reach P** US Army Corps of Engineers * River Miles: 224-174 Chute Below Red Eye Dikes Chute at Manchac Bend IB ERVILL! Prairieville Chute at Plaquemine Bend Plaquemine 200 Chute of Bayou Goula Towhead 190 Geisman **Chute of Claiborne Landing** 180 170 Darrow Donaldsonville **River Miles Location Map** 2000 Outlines 1990 Outlines TN OK GA 1980 Outlines AR 1970 Outlines AL TX 1960 Outlines FLFL Mississippi River Created By: Erin Marks Guntren Date Created: 1November2013

Figure P1. New Orleans district Reach P river miles 224-174.









Chute below Red Eye Dikes

1:55,000

Distance to gage: 6 river miles

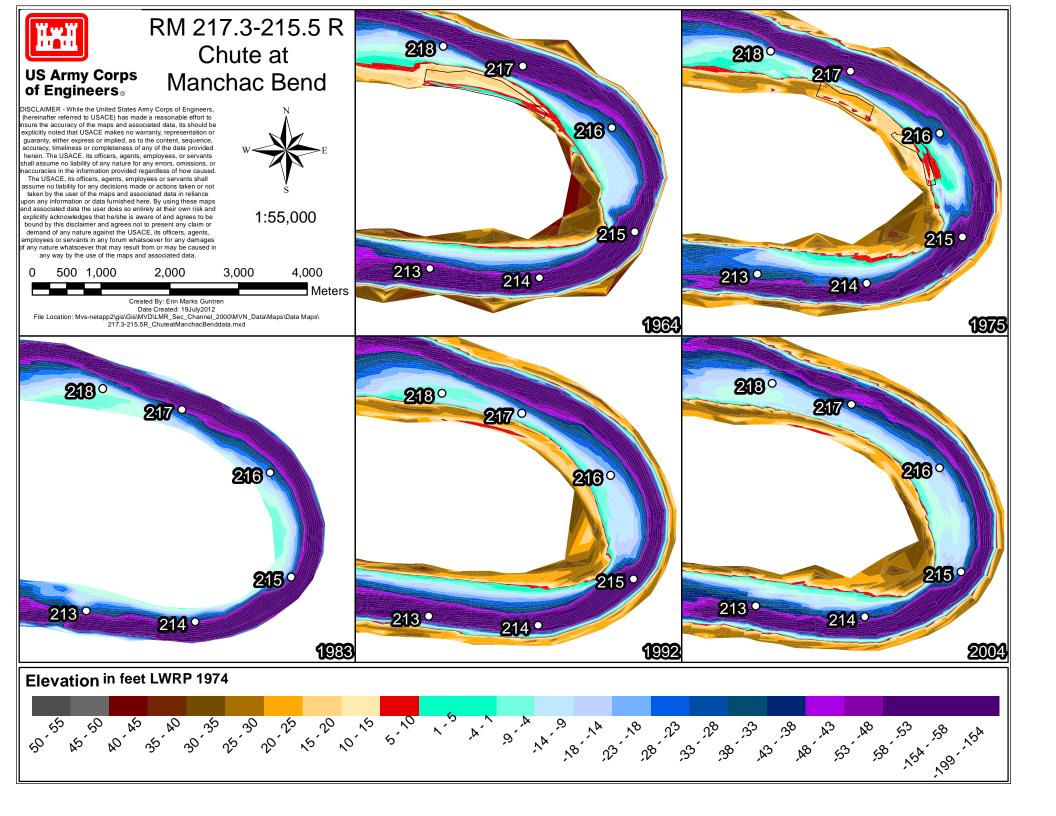
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2,400 4,800 1,200 3,600 Meters





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RM 217.3-215.5 R Chute at Manchac Bend

1:50,000 Distance to gage: 11 miles

2,200

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550 1,100

3,300

4,400

Meters

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RM 211.2-209.8 L Chute at Plaquemine Bend

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210°

209



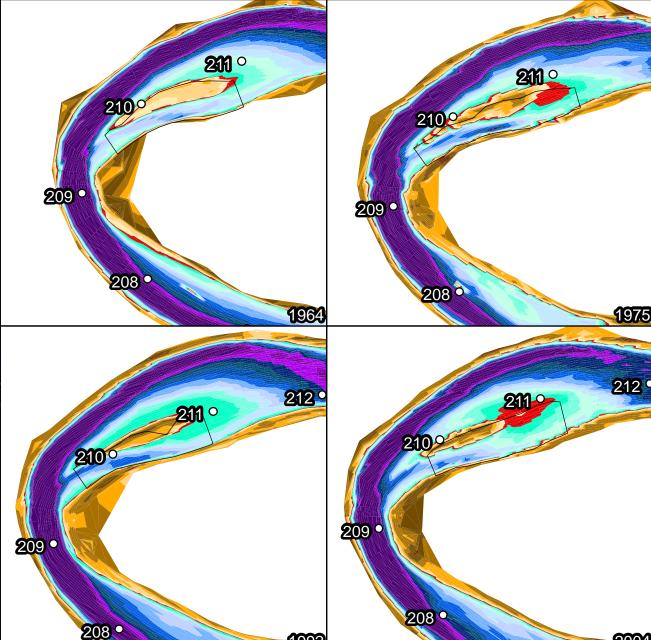
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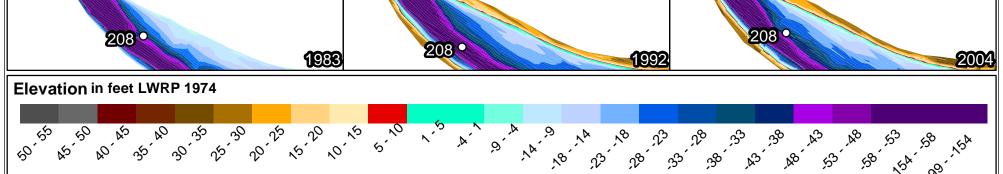


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211 °







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Chute at Plaquemine Bend

1:55,000

Distance to gage: 17 miles

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1,200

2,400

3,600 4,800

Meters

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US Army Corps of Engineers

RM 196.4-194.4 L Chute of Bayou Goula Towhead

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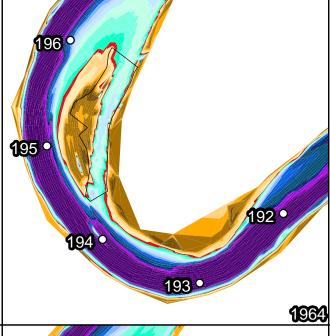
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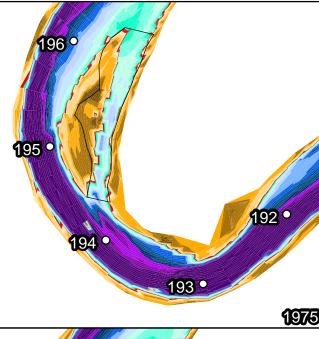


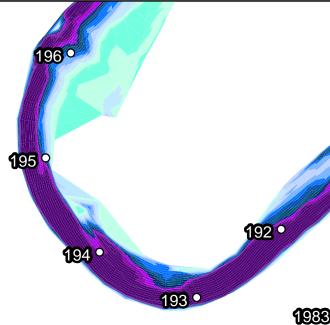
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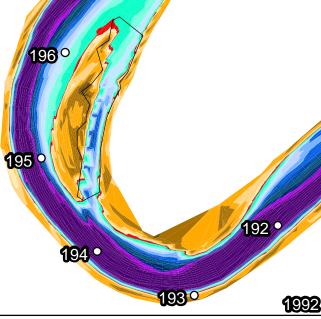


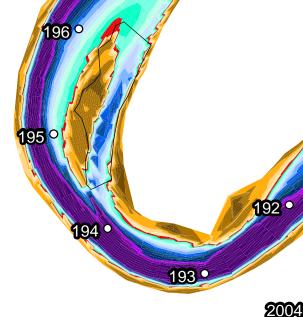
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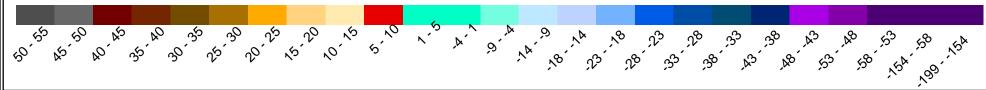


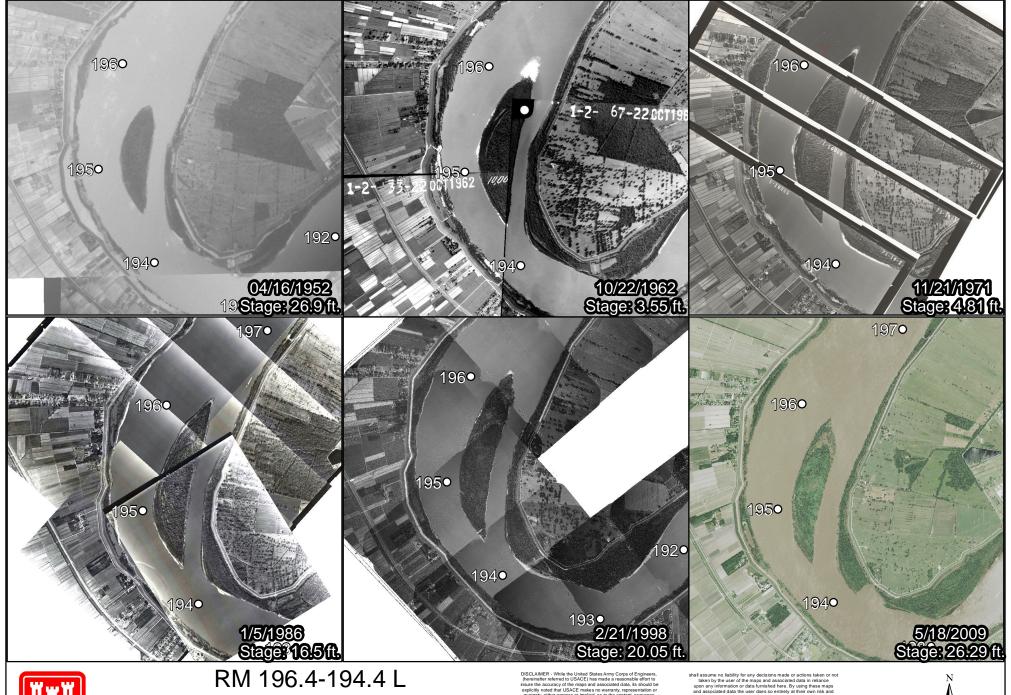






Elevation in feet LWRP 1974







RM 196.4-194.4 L Chute of Bayou Goula Towhead

US Army Corps of Engineers_®

1:55,000

Distance to gage: 25 miles

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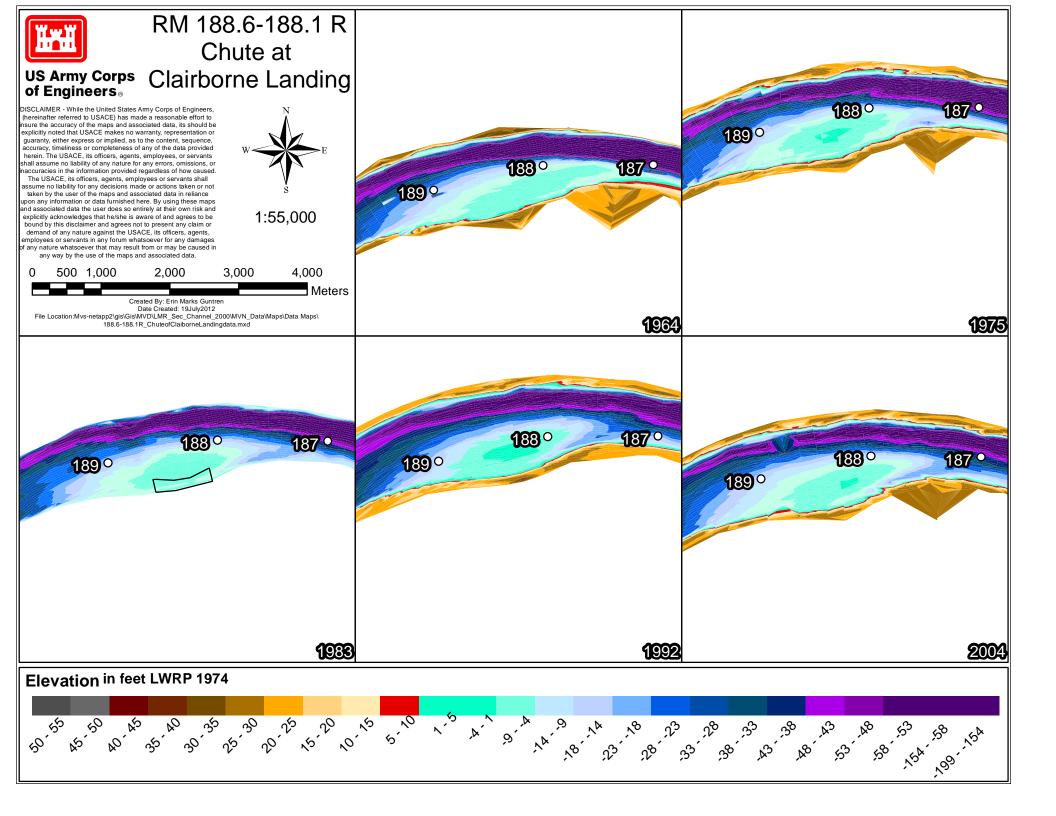
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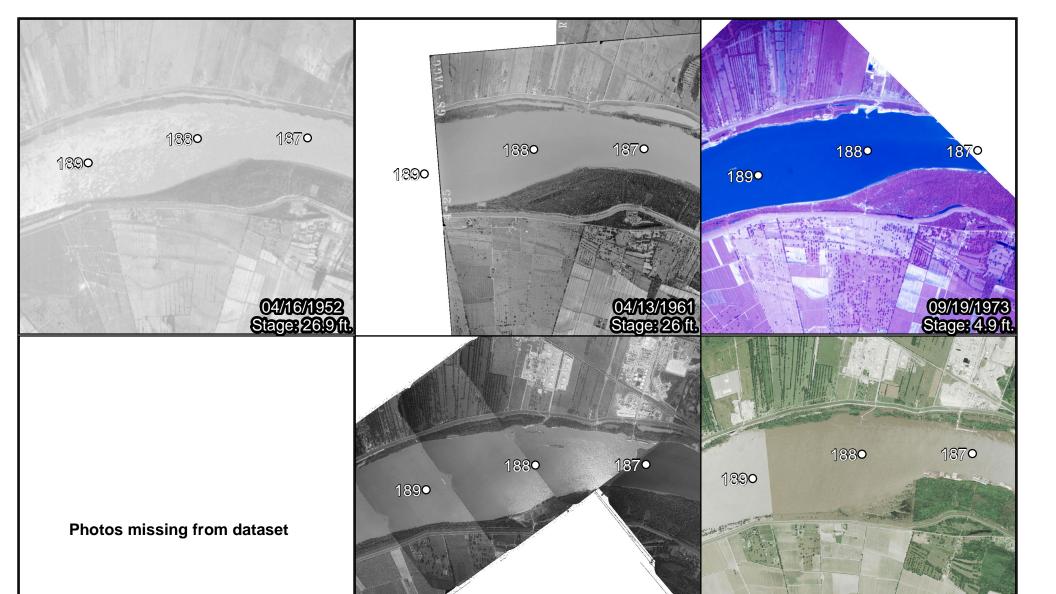


600 1,200 2,400 3,600

Meters

4,800







RM 188.6-188.1 R Chute at Clairborne Landing

1:55,000 Distance to gage: 13 miles

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2/21/1998 Stage: 20.05fit

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5/18/2009 Stage: 26.29 ft

600 1,200 2,400 3,600 4,800 Meters

Appendix Q: Reach Q – River Miles 174-124 New Orleans District

One secondary channel was identified in Reach Q (see below); therefore, there is no Reach Summary for this section of the river.

Table Q1. The name, river miles, year of data collection, data coverage, acres, and volume of the one secondary channel identified within Reach Q. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some years, the survey did not cover the secondary channel (insufficient data). River miles correspond to the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Year	Cura	Area (Acres)				Volume (yd³)	
Secondary Chamilei	Miles	ieai	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute of Bonnet Carre Island	132.1- 131.1R	1964	100%	0	0	0	0	0	0
Chute of Bonnet Carre Island	132.1- 131.1R	1975	100%	0	0	0	0	0	0
Chute of Bonnet Carre Island	132.1- 131.1R	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute of Bonnet Carre Island	132.1- 131.1R	1992	100%	0	0	10	40	3,000	251,000
Chute of Bonnet Carre Island	132.1- 131.1R	2004	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data

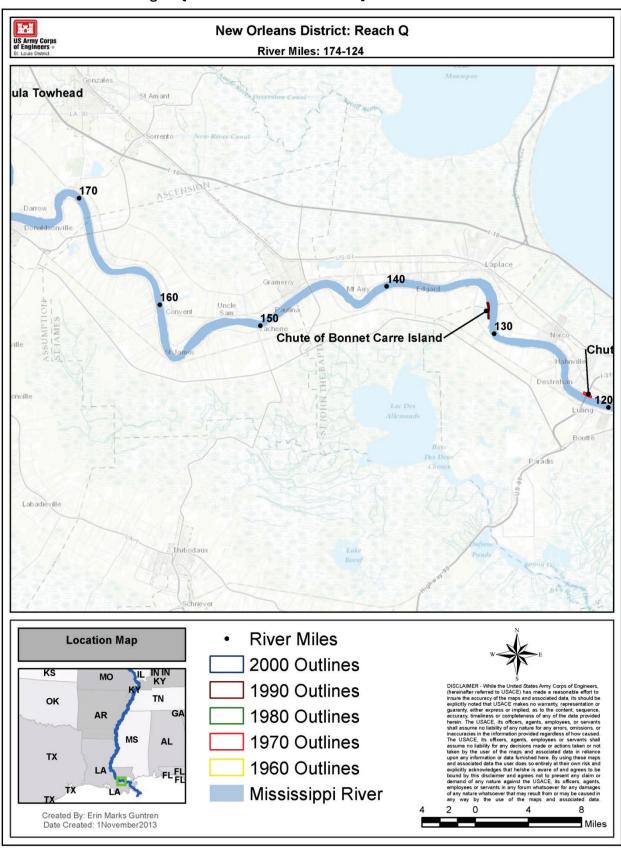
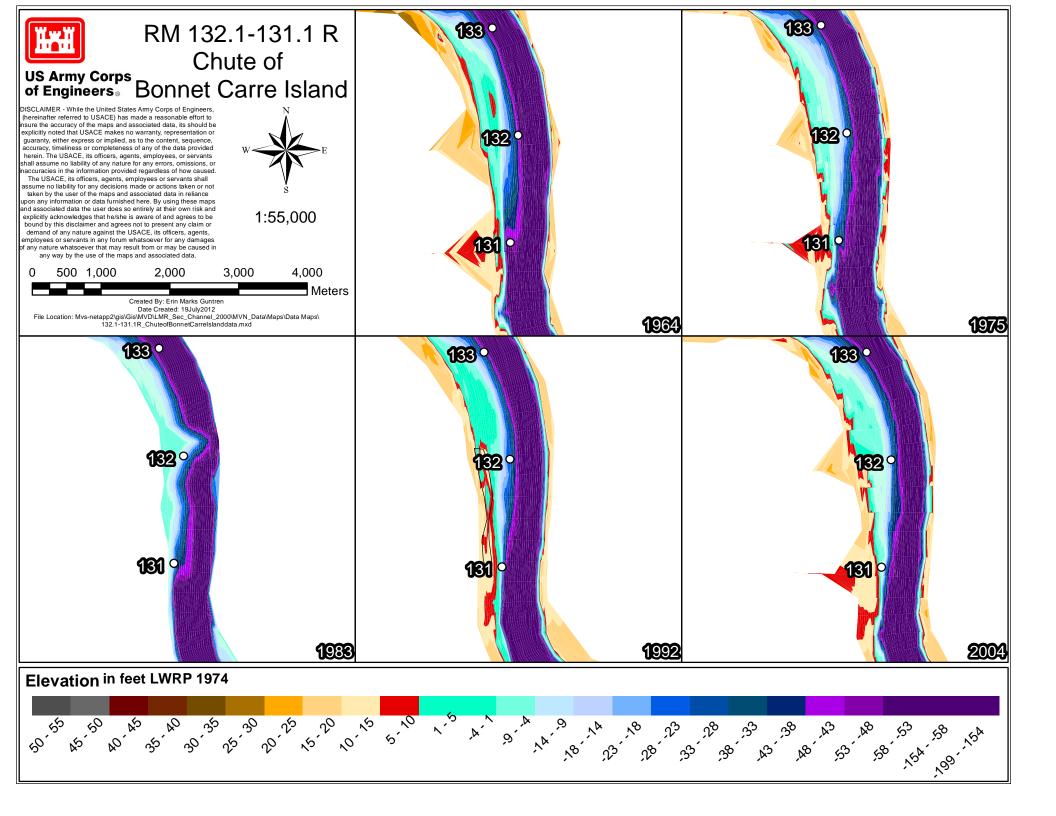
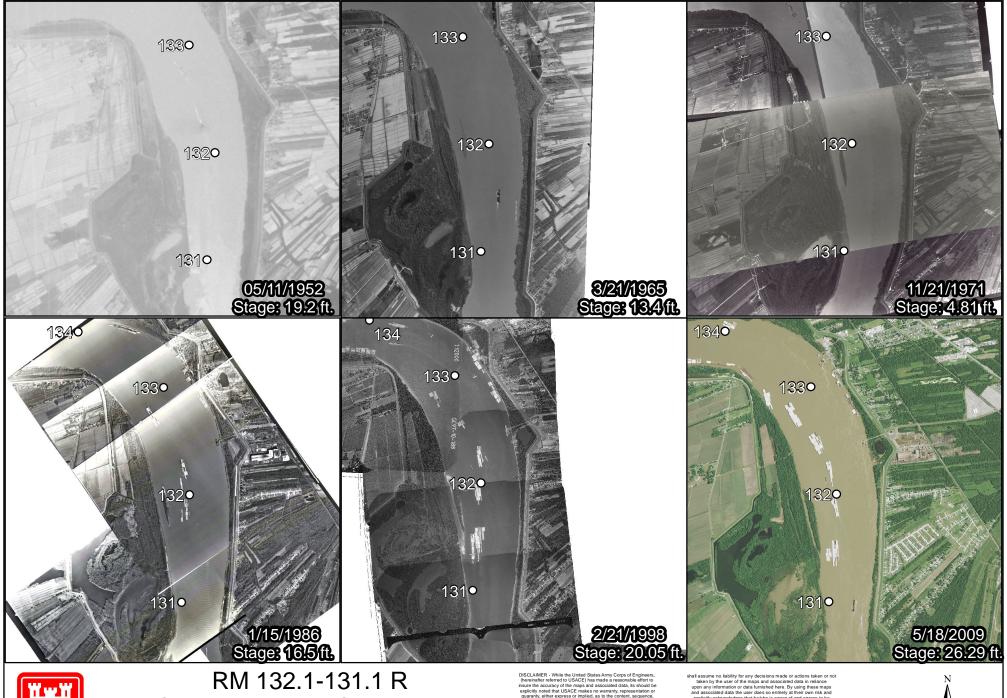


Figure Q1. New Orleans district Reach Q river miles 174-124.







Chute of Bonnet Carre Island

1:55,000 Distance to gage: 6 miles

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2,400 1,200

4,800 3,600

Meters

Appendix R: Reach R – River Miles 124-74 New Orleans District

One secondary channel was identified in Reach R (see below); therefore, there is no Reach Summary for this section of river. Additionally, this is the last secondary channel identified using this report's methodology in the Lower Mississippi River. There are no identified secondary channels from river mile 74 to the Gulf of Mexico at river mile 0.

Table R1. The name, river miles, year of data collection, data coverage, acres, and volume of the one secondary channel identified within Reach R. Area and volume are measured below a flat water surface at various elevations (-5, 0, 5, and 10 ft.). In some years there was no survey (no bath) or the survey did not cover the secondary channel (insufficient data). River miles correspond to the upstream and downstream ends of the most recent outline.

Secondary Channel	River	Year	Cura	Area (Acres)				Volume (yd³)	
Secondary Channel	Miles	Tear	Cvrg.	-5 ft	0 ft	+5 ft	+10 ft	0 ft	+10 ft
Chute at 26 Mile Point	121.9- 121.3L	1964	100%	0	0	0	0	0	0
Chute at 26 Mile Point	121.9- 121.3L	1975	100%	0	0	0	30	0	98,000
Chute at 26 Mile Point	121.9- 121.3L	1983	0%	insuf data	insuf data	insuf data	insuf data	insuf data	insuf data
Chute at 26 Mile Point	121.9- 121.3L	1992	100%	0	0	0	0	0	0
Chute at 26 Mile Point	121.9- 121.3L	2004	0%	no bath					

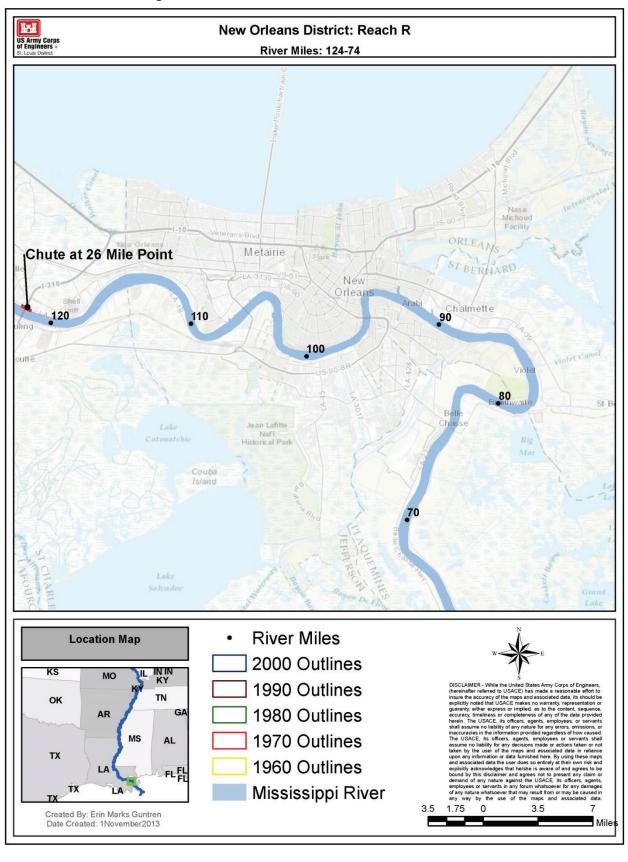
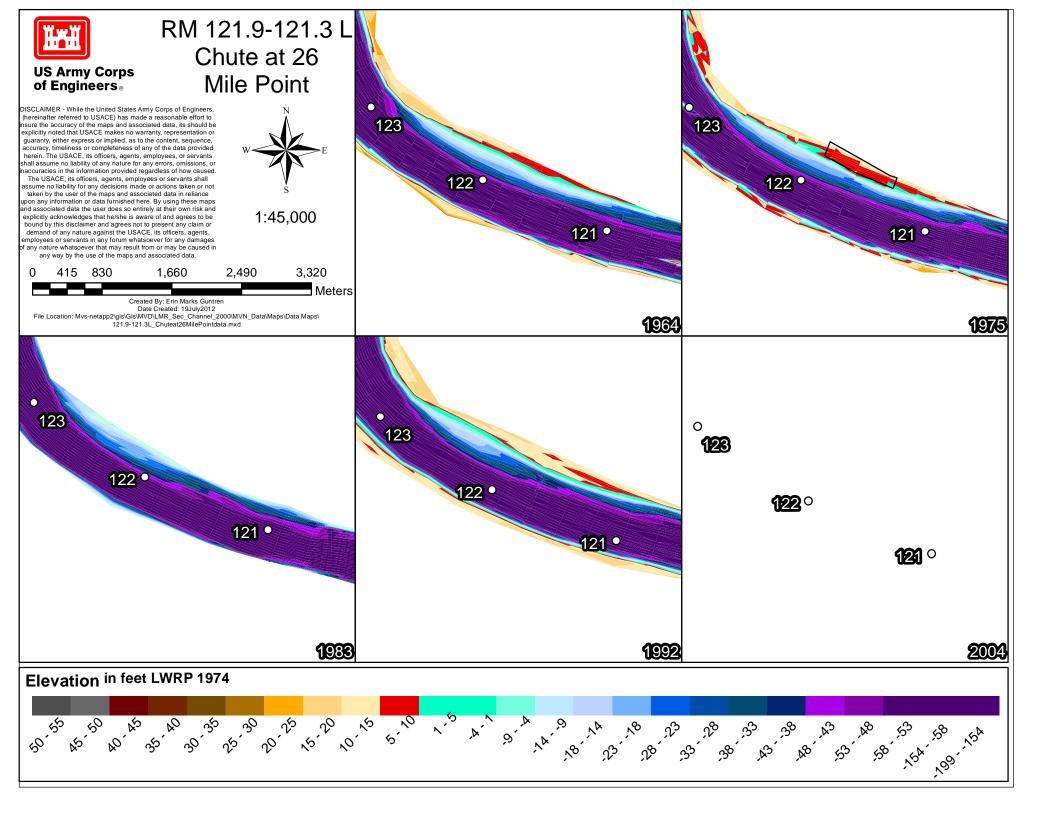


Figure R1. New Orleans District Reach R river miles 124-74.







Chute at 26 Mile Point

1:55,000 Distance to gage: 13 miles

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1,200 2,400 4,800 3,600 Meters

REPORT DOCUMENTATION PAGE

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

Historically, the Lower Mississippi River (LMR) flowed over 1,130 miles and had access to a 30- to 124-mile wide floodplain. Over time, a multitude of engineering activities undertaken to create safer navigation and reduce flood damage shortened the Lower Mississippi River by 140 miles and greatly reduced the floodplain. These engineering activities also included closing dike construction in secondary channels to divert more water to the main channel during low river stages. However, the importance of secondary channels to the overall river ecosystem has led to the removal or notching of many closing dikes to restore flow and connection at low river stages. As part of this overall effort to conserve and restore the function and value of secondary channels, this study provides information on the existing and long-term (1960s-2000s) trends of the channels' areas and volume. To do this, bathymetric data and aerial photography were gathered from the New Orleans, Vicksburg, and Memphis Districts, U.S. Army Corps of Engineers. Secondary channels were located in the bathymetric files by looking for islands or bars with elevations ≥ +5 ft Low Water Reference Plane. The secondary channels' boundaries were then digitized by drawing a polygon through the crest of the bar and extending it from the ends of the bar across the upriver and downriver mouths to the top bank. Along with river bed models created from the bathymetric data, these outlines were used to determine secondary channel area and volume for each decade (1960-2000). These data and aerial photographs of each channel for each decade are provided to aide in monitoring and restoration planning.

15. SUBJECT TERMS Aquatic communities C Aerial photography Co			River Island	restoration ds	
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